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THE TREATMENT OF GONOCOCCIC VAGINITIS WITH THE ESTRO- GENIC HORMONE

FURTHER STUDIES

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In 1934 James Brawner and I¹ undertook a study of the treatment of gonococcic vaginitis with estrogenic substance, using amniotin in the various forms that were available at that time. Since our paper published in 1935 we have treated a much larger group of patients, and sufficient time has now elapsed to permit a more seasoned judgment of this treatment. The mode of action of estrogen in curing the disease, the permanence of the cure and the ultimate effect on these young patients have been studied, so that we can now give a more extensive report and arrive at a general evaluation of this method of therapy.

For persons not familiar with the earlier work, a brief review of it is given here. Our work followed that of Lewis,² who conceived the idea that estrogen might be of value in treating gonococcic vaginitis in children. Having used the product hypodermically, he reported the cure of eight patients, in two of whom the vaginitis recurred. The theory on which this method of treatment is founded is based on the well known clinical fact that the young child's vagina is susceptible to gonococcic infections, whereas after puberty the vagina is notably resistant. The histologic difference between the child's vagina, lined with a thin layer of epithelium, and that of the adult, lined with a much thicker layer, is shown in figures 1 and 2. Allen³ showed that this thickening of the epithelial layer could be brought about in the vagina of immature animals by the administration of estrogen. On the basis of this fact, it occurred to Lewis that if this change could be induced in the child's vagina the gonococcic infection might be overcome.

Our earlier work consisted of four experiments in dosage and methods of administration. We first gave amniotin by mouth to six children suffering from vaginitis but were unable to effect any change in the vaginal mucosa. These children were under treatment for from seventy-nine to 123 days, with daily doses of from 3,200 to 16,000 international units. Only one got well, and,

since we could detect no change in her vaginal epithelium, we were not inclined to attribute the cure to the amniotin. (Apparently an occasional child with gonococcic vaginitis gets well spontaneously.) We then treated ten children with daily hypodermic injections of from 400 to 800 international units of amniotin in ethylene glycol solution. The maximum time of treatment of these children was seventy days. None showed any histologic change in the vaginal mucosa. One child got well, but, in view of the absence of changes in the vaginal epithelium, we are not inclined to attribute this cure to the amniotin. It is of interest in this connection to note Witherspoon's⁴ report of complete failure to cure vaginitis with hypodermic injections of amniotin in ten cases. At the time Witherspoon did this work amniotin was marketed only in ethylene glycol solution, and it is noteworthy that we are in complete agreement with him as to the use of amniotin in this solution. Nevertheless, as will be seen from our later studies, his results cannot be taken as a condemnation of the product when used in other vehicles.

Our third experiment consisted of the daily hypodermic administration of the estrogen in oil to twenty-two children with vaginitis. Doses of from 400 to 800 international units were given. Of the twenty-two children, sixteen showed the characteristic vaginal changes in an average of 13.5 days, and the smears became permanently negative in an average time of 17.5 days. It was found that a daily dose of 800 international units was as effective as larger doses. The remaining children failed to respond to the hypodermic administration even when such larger doses were given over a much longer period, but they did respond promptly when treated with suppositories.

Our last experiment consisted of the daily administration to twelve children of vaginal suppositories containing 600 international units of amniotin. All showed the vaginal epithelial response in an average time of 13.1 days, and the smears became permanently negative in 17.8 days. Treatment was continued for several days afterward, so that the average total time of treatment was 26.3 days. It is interesting to note that the average time of treatment necessary for the epithelium to change and the smears to become permanently negative is practically the same for patients cured by suppositories and those cured by the hypodermic administration of amniotin in oil. Figure 3 represents biopsies taken from the vagina before treatment, and figure 4 shows the change to the adult type following the use of suppositories. A typical vaginal smear before treatment is shown in figure 5 and one after treatment in figure 6.

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1. Te Linde, Richard W., and Brawner, James N., Jr.: Experiences with Amniotin in the Treatment of Gonococcal Vaginitis in Children, *Am. J. Obst. & Gynec.* 30: 512 (Oct.) 1935.

2. Lewis, Robert M.: A Study of the Effects of Theelin on Gonorrheal Vaginitis in Children, *Am. J. Obst. & Gynec.* 26: 593 (Oct.) 1933.

3. Allen, Edgar: Sex and Internal Secretions, Baltimore, Williams & Wilkins Company, 1934.

4. Witherspoon, J. T.: Treatment of Gonorrheal Vulvovaginitis in Childhood with Ovarian Follicular Hormone, *Am. J. Dis. Child.* 50: 913 (Oct.) 1935.

After completing these studies we decided that the treatment of choice was the administration of amniotin by suppository, and up to the present we have cured 175 patients. Although there is some individual difference in the rapidity with which the vagina responds, we have encountered no patient who did not eventually yield to the treatment. In the larger series the average time for epithelial response, as determined by vaginal washings and biopsies, remained at approximately two weeks. Rarely, as long as a month was necessary before the action of the estrogen could be noted, while occasionally a full response was seen in one week. Quite uniformly, the smear becomes negative within a few days after the vagina has begun shedding pure epithelium without pus.

PRESENT ROUTINE OF TREATMENT

The following routine of treatment has been adopted: The mother is told to wash the vulva at the daily bath, but no vaginal irrigations or instillations are used. She is then given a demonstration of how to introduce a suppository into the child's vagina. The suppositories of amniotin for children which are now on the market contain 1,000 international units and have proved most satisfactory. In almost every instance they can be inserted into the child's vagina without difficulty. Only once did we find it necessary to rupture the hymen, with the child under anesthesia, before treatment could be satisfactorily carried out, but it would seem that the better drainage obtained by this procedure in children with minute hymenal orifices is probably also advantageous in clearing up the infection. Although the 1,000 international unit suppositories are of higher dosage than the suppositories containing 600 international units, used in our earlier work, we have seen no advantage or disadvantage in the increased dose. One suppository is introduced daily at bedtime.

The patients are brought back to the clinic at weekly intervals, when vaginal smears and washings are made. The washings are made with a small medicine dropper

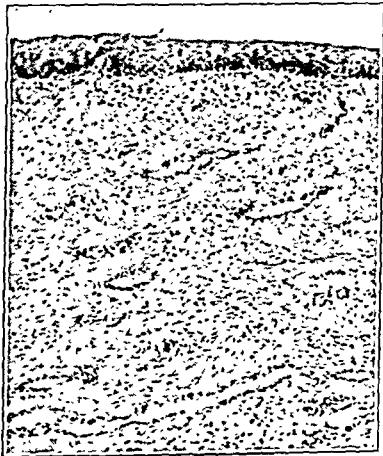


Fig. 1.—The normal vagina of a child aged 14 months (autopsy).

and examined under low magnification. As soon as the vagina is well under the influence of the estrogen, epithelial desquamation begins. At times this is so profuse as to cause the mother to fear that there is an increased amount of pus. But as soon as this epithelial response takes place, the vulval reddening begins to clear up, and in a few days the smear usually becomes negative. We insist on the smears being stained by the Gram method, so that the gonococci can be differentiated from gram-positive cocci of like structure. When the gonococci are numerous and many typical cells loaded with diplococci are observed, little difficulty is experienced in interpreting the smear, but as the condition begins to clear up and the organisms become scarce the great advantage in the differential stain becomes apparent.

After the first negative smear the treatment is continued for two more weeks, and if the weekly smears continue to be negative it is discontinued. In the average case, the entire treatment extends over about a month. It is possible that in some cases treatment could be discontinued in less than two weeks after the smears become permanently negative, but since we have been following this routine recurrences have been rare, whereas when we discontinued treatment sooner, in our earlier studies, they were more frequent. The children are brought back to the clinic one and two months after discontinuing treatment, as a matter of dispensary routine, but for research purposes our first hundred patients were followed much longer.



Fig. 2.—The normal adult vagina; specimen taken from a woman aged 37.

At the time of our first paper a question was raised by many persons, including ourselves, as to the permanence of the cures. Owing to the short time which had elapsed, we were unable to answer this question. Since then we have made a follow-up study of the first 100 cured patients. Of these children ninety-eight were well at the time of the last examination, from three months to two and one-half years after the cessation of treatment. Whether the two children who were found to have vaginitis at the time of the check-up represent recurrences or reinfection is debatable. Considering the prevalence of gonococcic infections in the Negro homes from which most of these children come, there is the distinct possibility of reinfection. At any rate the percentage of permanent cures may be said to be 98 in this group.

The possibility of harm to young patients with vaginitis through the administration of estrogen has been uppermost in our minds since we began this study. In our first publication we reported no harm to the patients except for some localized painful induration at the site of the injection when the amniotin was given in oil. This effect we considered a distinct disadvantage of this form of treatment but it has been overcome by the substitution of vaginal suppositories. No cases of salpingitis were noted in our first series of thirty-five cases, and none have been noted in our present series of 175 cases.

In the light of further experience the ultimate effect of the estrogen on the genital tract may now be considered. From the laboratory standpoint the work of several investigators has a bearing on the question. Allen and Diddle⁵ gave monkeys amniotin (hypodermically) in doses comparable to those received by our children. Examination of the monkeys' ovaries thirty days after the cessation of treatment showed them to be normal histologically.

The results of Shumacker's⁶ work on mice coincided with those of Diddle and Allen. Leonard, Meyer and

5. Allen, Edgar, and Diddle, A. W.: Ovarian Follicular Hormone Effects on the Ovaries, *Am. J. Obst. & Gynec.* 29: 83 (Jan.) 1935.
6. Shumacker, H. B.: Personal communication to the author.

Hisaw⁷ working on immature rats, found that the administration of the follicular hormone begun early in life and continued beyond the time of normal sexual maturity prevented the full development of the ovaries. The ovaries of the treated animals contained fewer follicles and corpora lutea and weighed from 43 to 49 per cent less than those of the untreated animals. They concluded that this was not a direct effect on the ovaries but was the result of the action of the estrogenic substance on the anterior lobe of the pituitary. They based this belief on the experimentally demonstrable fact that the implanted pituitaries of the treated rats were less potent than the pituitaries of untreated rats in their ability to produce sexual precocity in the immature female.

Hisaw and his collaborators found, however, that when the injection of estrogen was discontinued before the animals were sexually mature no outstanding changes could be noted in the ovaries. When one considers the short span of their immature life during which children with gonococcic vaginitis received the estrogen, there is nothing in Hisaw's data which would indicate that the clinical use of this substance in the treatment of vaginitis is harmful. Mazer and Israel⁸ found that the injection of 160 international units twice weekly for four months produced no ill effect in infantile rats.

In our early cases of hypodermic administration we observed definite hypertrophy of the breasts in most of the children who received any great quantity of amniotin. On the other hand, the children who received amniotin vaginally showed no changes in the breasts. This difference suggested that when the substance was administered by the vagina there was little general absorption and that the more marked effect noted in the vaginal mucosa might be due to greater local concentration. Our subsequent larger series in general confirms this idea, but in two patients treated vaginally we noted slight changes in the breasts, indicating in rare instances some general absorption. We attempted to study the absorption and the excretion of amniotin administered by the vagina by making quantitative determinations of the estrogen in the twenty-four hour output of urine. By estimating the amount of estrogen in the blood and the amount in the urine simultaneously, Mazer and Israel⁸ have shown that the content in the urine reflects fairly accurately the amount in the blood. We first determined the estrogen output of twenty-five normal children. Practically every child excreted less than 2 rat units to a twenty-four hour specimen. Determinations were then made on the twenty-four hour specimens of children whose vaginal washings and biopsy specimens showed them to be under the influence of the amniotin. The determinations were made on the day following the administration of the last suppository. The results of these determinations showed, in practically every case, less than 2 rat units to a twenty-four hour specimen.

If one assumes the parallelism between the amount of estrogen excreted and the amount in the circulating blood, as shown by Mazer and Israel, these results suggest little general absorption of amniotin when it is given by the vagina. The possibility that the excretion in immature children may not be a true index of the

absorption, as in adults, because of the storage of estrogen, must be considered. We believe that the prolonged storage in children is unlikely because the effect on the vaginal mucosa does not persist long. As evidence of this is the fact that vaginal biopsies regularly show a return to the immature type in from four to six weeks.

The last word concerning the possible harmful effect of estrogenic substance cannot be said until a group of children treated with it have reached maturity and borne children. At this time, however, it is possible to say that all of the children so treated seem to be developing normally as far as can be determined by examination of the external and the internal genitalia. Of the 175 children whom we have treated, two have reached or passed the age of 13. One of these began to menstruate ten months ago and has menstruated regularly since. The other, at 14, has just had her first period. Another child had her first period three months ago, at 11 years, and has menstruated regularly since. In view of this clinical and laboratory experience we believe that up to date no evidence has been found that the treatment is harmful.

The *modus operandi* by which the gonococcus is eliminated from the child's vagina has been the subject of some speculation. Lewis and Weinstein⁹ have suggested that the increased acidity noted as a result of the estrogenic action is the essential factor in eliminating the infection. *In vitro* the gonococcus grows best in a medium with a p_H of from 7.2 to 7.6. The organism is very sensitive to higher acidity and rarely grows in a medium as acid as p_H 6 or 6.2. Lewis and Weinstein showed that

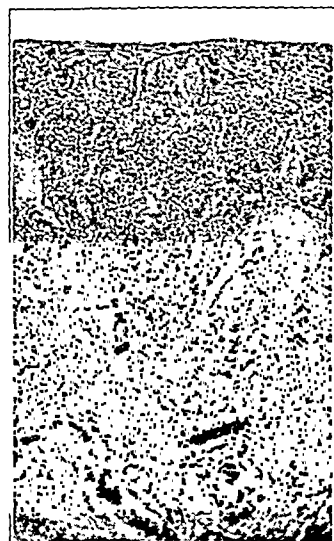


Fig. 3.—Biopsy specimen from the vagina of a child before treatment. Note the marked infiltration of inflammatory cells and the complete absence of epithelium.

after the vaginal mucosa has reacted to estrogen there is a well marked acidity, the p_H ranging from 4.8 to 6. Our results confirmed this observation. In a series of twenty cases of untreated gonococcic vaginitis the average vaginal p_H was 7.5. After adequate treatment with amniotin suppositories the average p_H was 5. Lewis and Weinstein concluded that this greater acidity is responsible for the disappearance of the gonococcus.

In order to cast some light on this question, we first made careful observations on the vaginal acidity of twenty-five normal children aged from 3 to 14 years, using nitrazine paper wrapped about a toothpick swab inserted into the vagina. We found that those aged from 3 to 10 years (seventeen children) had an average vaginal p_H of 7.3, whereas the average p_H for children from 11 to 14 years old (eight children) was 4.5. The fact that gonococcic vaginitis tends to disappear spontaneously at the approach of puberty, when this decided increase in acidity occurs, seems to favor Lewis's view. However, one must not lose sight of the

7. Leonard, S. L.; Meyer, R. K., and Hisaw, F. L.: The Effect of Estrin on Development of the Ovary in Immature Female Rats, *Endocrinology* 15: 17 (Jan.-Feb.) 1931.

8. Mazer, Charles, and Israel, S. Leon: Studies of the Optimal Dosage of Estrogens, *J. A. M. A.* 108: 163 (Jan. 16) 1937.

9. Lewis, R. M., and Weinstein, Louis: Production of Vaginal Acidity by Estrin, *Surg., Gynec. & Obst.* 63: 640 (Nov.) 1936.

fact that at puberty there is also a histologic change in the epithelial covering of the vagina, which may also be an important factor in the clearing up of the vaginitis.

It occurred to us that if the increased acidity was the sole factor in clearing up the infection we might accomplish the same end by increasing the acidity by another method. Karnaky¹⁰ had already reported success in clearing up vaginitis by acidifying the vagina. For this purpose he used a vaginal suppository of a preparation called floraquin. Each suppository contained 1½ grains (0.1 Gm.) of diodoquin, lactose, dextrose and boric acid. We treated a series of seventeen children by the insertion twice or three times daily of a suppository into the vagina. We were able to increase the average acidity from p_H 7.5 before the treatment to p_H 5.7. This is well below the point at which the gonococcus will grow *in vitro*. With the increased acidity Döderlein's bacilli appeared in the

vagina to some degree in each case. The patients were treated for from thirty-five to 123 days. Seven became free from infection and were clinically well. They have remained well from one to seven months, as determined at our last check-up. Five got well and relapsed from eleven days to three months after cessation of treatment. Of course we required three negative smears at weekly intervals before stopping treatment in these cases as well as in those in which amniotin was given. In five cases the condition failed to clear up even though the treatment was continued for many times as long a period as is necessary to cure the vaginitis with amniotin.

In one case the vaginal acidifying was continued for 123 days with no effect on the infection. Even in those cases in which the gonococcus failed to be eradicated, Döderlein's bacilli appeared, occurring in the smears along with the gonococci. It may be said, however, that in those cases in which Döderlein's bacilli appeared in great numbers the acidity was usually greatest and the gonococcus absent.

We concluded from these experiments that, although the vagina could be made acid with floraquin (p_H 5.7) to a degree beyond the acidity at which the gonococcus will grow *in vitro*, the results in clearing up the infection were much less satisfactory than with amniotin. Vaginal specimens for biopsy taken after treatment with floraquin usually showed a covering of the ulcerated surface but not the marked epithelial thickening noted after treatment with amniotin, and, although the vaginal surface was often healed, a marked subepithelial infiltration with inflammatory

cells frequently remained. It would seem, then, that the increased acidity brought about either by direct acidifying or by the use of amniotin is detrimental to the growth of gonococci in the vagina. Still the fact that the results are so much better when amniotin is used would indicate that another factor exists which is not present when the vagina is acidified directly.

At the present time we are unable to prove definitely what this other factor is, but we are inclined to believe that the simple healing of the ulceration and the complete covering of the vagina with a thick adult type of epithelium has an important part in the eradication of the infection. Biopsy specimens taken before treatment usually showed marked ulceration, whereas after treatment a thick intact epithelial surface was present. We believe, after studying biopsy specimens from the vaginal wall taken at various times in the course of the treatment, that the gonococcus does not live long when buried in the tissues. It is possible to watch the gradual subsidence of the inflammatory process in the subepithelial tissues after the surface has become epithelized. Curtis has shown in his bacteriologic studies that the gonococcus does not live long buried in the walls of the tubes. Seldom could he obtain the gonococcus in culture more than two weeks after the subsidence of the fever and the leukocytosis. Our histologic studies on the vaginal wall tend to show the same subsidence of the inflammation after surface epithelization, whereas in the case of untreated vaginitis the deeper tissues are constantly subject to reinfection from the surface growth. After estrogen has produced an adult type of epithelium there is a barrier which the gonococcus apparently cannot invade. With the increased acidity of the vaginal secretions and the resultant death of the surface organisms there remains the destruction of the organisms deep in the tissues before a permanent cure can be effected. Judging from our histologic studies, this always occurs when the vaginal surface becomes covered with the adult type of epithelium.

Before we conclude this report on gonococcal vaginitis it would seem in order to discuss briefly a few points regarding the nature of the disease which have become apparent in our observation of this large series of cases. Much has been written concerning the involvement of the cervix, urethra and rectum. The literature contains many statements regarding cervical involvement which are at extreme variance. Perrin¹¹ in 1911 stated that the essential lesion is "endometritis of the neck of the cervix." Rubin and Leopold¹² believed the cervix is involved because the infection persists after prolonged treatment. Burnet¹³ went so far as to say that, whereas inflammation of the vagina is present in many cases, it is mild and subsides rapidly as the infection in the cervix gains a foothold. Stein¹⁴ suggested the term "vulvocervicitis" as being more descriptive of the actual lesion.

In answer to those workers who consider the vaginitis slight or nonexistent, one has only to refer them to our figure 3. We have made more than a hundred vaginal biopsies for patients with acute and chronic forms of the disease, all of which showed inflammation of the vagina, often with marked ulceration. Reichert

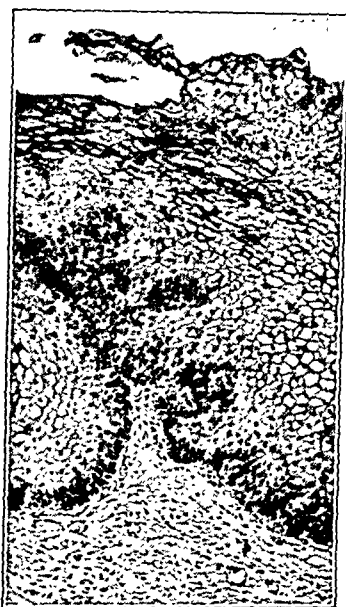


Fig. 4.—Biopsy specimen from a child's vagina taken on the twenty-fifth day of treatment. Note the marked thickening of the epithelium and the total absence of inflammatory products.

11. Perrin: *Rev. Méd. de la Suisse Rom.* 31: 732, 1911.
12. Rubin, I. C., and Leopold, J. S.: On the Cause of the Persistence of Gonorrheal Vulvovaginitis in Children, *Am. J. Dis. Child.* 5: 58 (Jan.) 1913.
13. Burnet, W. M.; Tolle, D. M.; Scudder, S. A., and Medcalf, A. R.: Cervicovaginitis of Gonococcal Origin in Children, *Hosp. Soc. Serv.* Supp. 1, March 1933.
14. Dorne, M., and Stein, I. F.: Mercurochrome Ointment Treatment of Vulvovaginitis, *Illinois M. J.* 45: 219 (March) 1924.

and his co-workers¹⁵ reported a 98 per cent involvement of the cervix. We have no objection to this figure if it refers to the vaginal portion of the cervix, but our observations have pointed strongly against involvement of the endocervix. Inspection of the vaginal portion of the cervix through a Kelly speculum often shows it to be as red and granular as the inflamed vagina. After treatment it becomes pale pink, like the vagina. This direct observation leaves little doubt that the vaginal portion of the cervix is involved with the vagina. But after all, histologically the vaginal portion of the cervix is merely a continuation of the vagina; the endocervix, lined with columnar epithelium, is an entirely different structure.

After adequate treatment of the vagina with amniotin we have seen no evidence of a persistence of the infection in the endocervix. We have no doubt that gonococci can be recovered from the cervical canal during the active stage of the vaginitis, when the cervix is bathed in pus, but we have seen no evidence of an endocervicitis comparable to that of the adult. If the tissues of the endocervix were involved, one would expect the infection to persist there in some cases after the clearing up of the infection in the vagina as a result of the action of the hormone on the vaginal mucosa. Our results show that it does not do so.

As in the case of the cervix, there is a wide divergence of opinion as to urethral involvement. Some investigators state that urethral involvement has no part in determining the course of the disease. At the other extreme is Stein, who stated that urethritis is an "inevitable complication." Other workers estimate the

It is true that at times the meatus, along with the other tissues of the vaginal vestibule, is red and edematous. It is also true that positive smears can often be obtained from the urethra, but this is no more than can be expected when the meatus is bathed in pus and there is no tight sphincter at the external meatus. The fact that the organisms frequently enter the urethra without



Fig. 6.—A stained vaginal smear taken after fifteen days of treatment.

giving rise to symptoms of clinical urethritis indicates resistance rather than susceptibility on the part of the young urethra to gonococcal infection. In our series, after the clearing up of the vaginitis with amniotin there was in no case any evidence of a residual infection in the urethra.

In regard to gonococcal proctitis in children, the views expressed in the literature vary greatly. At one extreme is the work of Ruys and Jens,¹⁶ who found gonococci in the rectum in 100 per cent of their series. At the other extreme are Reichert and his co-workers,¹⁵ who, in spite of routine cultures and smears of material from the rectum, together with proctoscopic examinations, found no instance of rectal or anal disease. Our views are in complete accord with those of Reichert. Although we did not regularly make smears or cultures of material from the rectum we did make routine digital rectal examinations, and in no case could we find any evidence of proctitis. We are inclined to feel that many observers who have obtained positive smears from the rectum have, on that basis, assumed the existence of proctitis, but certainly the presence of gonococci in the rectum does not necessarily mean proctitis. Is it not more probable that the presence of gonococci in the rectum without evidence of proctitis would indicate a resistance of the tissue to invasion by that organism?

SUMMARY

We have reported the cure of 175 patients with gonococcal vaginitis by amniotin. All, except sixteen of those to whom the product was given hypodermically in oil, were cured by the use of amniotin vaginal suppositories. We have yet to encounter a patient who failed to get well by this method of treatment, and we consider it a very satisfactory way of dealing with the

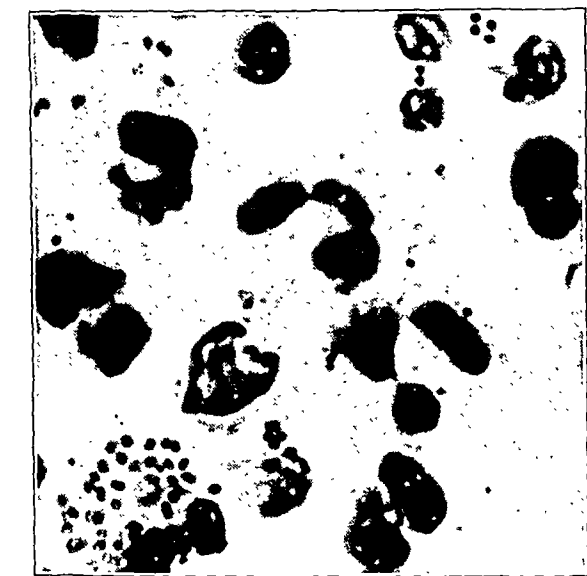


Fig. 5.—A stained vaginal smear taken before treatment.

rate of urethral involvement as from 10 to 20 per cent. Unrecognized urethral involvement has been blamed as a common cause of relapse. According to our experience urethritis is certainly in the vast majority of cases not a part of the pathologic process. We base this opinion on the fact that the classic symptom of urethritis, burning on urination, was not complained of by any of our children, although many of them were old enough to give an intelligent history.

15. Reichert, J. L.; Epstein, I. M.; Jung, Ruth, and Colwell, Charlotte A.: Infection of the Lower Part of the Genital Tract in Girls, *Am. J. Dis. Child.* 54: 459 (Sept.) 1937.

16. Ruys, A. C., and Jens, P. A.: Kulturell Untersuchung des Rektalschleimes bei Kindern mit Vulvovaginitis gonorrhoeica, *München, med. Wchnschr.* 80: 846 (June 2) 1933.

disease. A follow-up of our first 100 patients, from three months to two and one-half years after the last treatment, showed ninety-eight of them well. We saw no clinical evidence of harm due to the treatment, and laboratory investigations confirm this observation. We feel that the increased acidity brought about in the vagina by the action of the estrogen is a factor in overcoming the infection, but, since our results were not nearly so good when another acidifying suppository was employed, we believe that amniotin introduces an additional factor. We are inclined to think that this other factor is the covering of the vagina with thick epithelium, which prevents reinfection of the subepithelial tissues and thus permits the inflammatory process in them to subside. Our clinical observations and biopsies have indicated that the essential lesion of gonococcal infection of the lower part of the genital tract in female children is vaginitis.

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STUDIES IN NODULAR GOITER

I. INCIDENCE OF THYROID NODULES IN ROUTINE NECROPSIES IN A NONGOITROUS REGION

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The relative frequency of nodular and of nonnodular thyroid glands in both goitrous and nongoitrous districts has been repeatedly studied in Europe.¹ The few such studies in this country² deal exclusively with material from goitrous districts. Apparently no such survey in an Americal nongoitrous district has ever been made.

Aschoff³ and Clerc⁴ state that in nongoitrous regions nodules in the thyroid gland are just as common as in goitrous regions but that they are usually microscopic. However, in our routine autopsy material, from a nongoitrous district, we encountered what seemed an unusually large number of thyroid nodules of fair size. Most of these nodules discovered post mortem had not been palpated ante mortem. This was disturbing in view of the current tendency to regard all such nodules as potentially malignant and to advise their

extirpation as prophylactic treatment against the development of carcinoma of the thyroid gland.⁵

Because of the apparent lack of a similar study in nongoitrous regions elsewhere in this country, and because of our impression that nodules in the thyroid gland are more common than clinically suspected in such districts, we have reviewed the autopsy material available in Boston.

NATURE AND SELECTION OF MATERIAL

The material studied consisted of 2,185 recent complete autopsy protocols from three large teaching hospitals in Boston. In only 1,371 of these autopsies had the thyroid gland been examined, because of limitations of incisions or other restrictions. Since the recorded descriptions of such examinations were often meager, the adoption of some strict and absolute criterion of a nodule became necessary. Since we were primarily interested in the clinical significance of such nodules, it was felt that the adopted standard should be applicable to the clinical examination of the patient. From an academic point of view, or even from the point of view of their potential danger, small nodules are possibly as important as larger ones. However, if a nodule is too small to be readily palpable, it is of no "clinical" significance. Therefore, in order that the studies might be directly transferred to the clinic, only nodules of 1 cm. or more in average diameter were included in our figures. Nodules of this size should be easily palpable clinically, at least if they are in an exposed position.

Other reports² make no exact statement concerning the size of the nodules considered, and presumably they included smaller nodules than we have selected. Thus our incidence of nodular thyroid glands will be lower than if all "nodules" encountered had been included. Also, if the autopsy protocol stated no actual dimensions of a nodule described, the thyroid gland was tabulated as in the nonnodular group. Our final figures, therefore, because we limited them to nodules measuring 1 cm. or more, not only do not include all nodules but also err on the side of omitting some observed nodules that should be clinically palpable. Moreover, since in the clinical appreciation of a nodule not only its size but its consistency is an important factor, the selection of nodules was further restricted to distinct, separate, individual masses, clearly demarcated and grossly different in texture, consistency and appearance from the surrounding thyroid tissue.

RESULTS AND COMMENT

In table 1 are given the complete data, arranged according to the hospital from which they were obtained and giving the general average incidence of nodules, as well as their distribution among males and females of all ages, and in those over the age of 50. It will be noted that the incidence of nodules averages 8.2 per cent of all the specimens examined. This figure is markedly lower than that found in goitrous districts. However, the striking point is the difference in incidence between the three hospitals in the same city, varying between 5.2 and 14.9 per cent. The slight difference in the sources from which these three hospitals in Boston draw their patients does not seem sufficient to explain this discrepancy. Thus the patients of hospital 2 are almost

Read in part before the New England Pathological Society, Nov. 18, 1937.

From the Department of Pathology, Harvard University Medical School, and from the Pathology Laboratory and the Endocrine Clinic of the Beth Israel Hospital.

1. These studies include:

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entirely residents of Boston. Hospital 1 has a population largely from Boston and its close vicinity, with a moderate number of patients from not only all of New England but from all parts of the country. Hospital 3, with the largest percentage of nodular thyroid glands, has a clientele largely Jewish, whereas in the other two hospitals the opposite is true.



Fig. 1.—Section of colloid nodule slightly reduced from a photomicrograph with a magnification of 14 diameters.

As regards the distribution of nodules between men and women of the whole group and also in that portion of the group over 50 years of age, our observations are in accord with those in previously reported series of this nature, in that we found a higher incidence of

in the selected groups over 50 years of age. Over this age the proportion of women to men is slightly larger than in the younger group.

Special attention is called to the incidence of 37.2 per cent of nodules in women over 50 years of age in hospital 3. This incidence approaches that found in goitrous districts. It is not nearly approached in the other two hospitals. Hospital 3 has about 80 per cent of Jewish patients, which it draws largely from Boston and its immediate vicinity. These patients have come from all parts of the world but have spent the major part of their life, although not their adolescence, in or

TABLE 2.—Incidence of Nodules of Thyroid Gland According to Age and Sex

Age	Males			Females			Males and Females		
	+	—	%	+	—	%	+	—	%
0-9.....	..	32	0	..	20	0	..	52	0
10-19.....	..	18	0	1	15	6.2	1	33	2.9
20-29.....	..	40	0	1	36	2.7	1	76	1.3
30-39.....	..	54	0	5	44	10.2	5	98	4.9
40-49.....	6	104	5.4	5	103	4.6	11	204	5.1
50-59.....	18	181	9.0	19	124	13.3	37	305	10.8
60-69.....	4	166	2.4	25	136	15.5	29	302	8.8
70-79.....	11	100	10.0	15	67	18.3	26	167	13.5
80-89.....	..	12	0	2	12	14.3	2	24	7.7
Total.....	39	704	5.5	73	557	11.6	112	1,261	8.2

+ = nodules present; — = nodules absent; % = percentage of nodules present.

near Boston. Hospital 2 caters to a similar group of patients, but a much smaller proportion of them are Jewish. It has an intermediate incidence of nodules between hospital 3 and hospital 1. There is, in general, a more widespread origin of patients in hospital 1 than in either of the other two hospitals.

TABLE 1.—Incidence of Nodular Goiter in Three Hospitals in Nongoitrous Region

	Hospital			
	1	2	3	Combined
Routine autopsies.....	786	587	812	2,185
Thyroids examined.....	551	464	328	1,373
Total nodules.....	30	33	49	112
Per cent.....	5.2	7.1	14.9	8.2
Nodules in males.....	8	12	19	39
Per cent.....	3.0	4.3	9.5	5.3
Nodules in females.....	22	21	30	73
Per cent.....	6.9	11.4	23.6	11.6
Nodules in males over 50 years of age...	7	10	16	33
Per cent.....	3.5	5.6	13.8	6.7
Nodules in females over 50 years of age...	19	16	26	61
Per cent.....	8.5	15.0	37.2	15.2

nodules in the thyroid glands of women than of men, and also that such nodules are more frequently found with increasing age. However, the ratios of women to men with nodular thyroid glands in reports from goitrous districts vary from 10:1 to 4:1.⁶ In our series, this ratio is only about 2:1. Thus the influences at work, whatever they may be, resulting in nodules in the thyroid gland in nongoitrous districts, affect men and women more nearly alike. The proportionately larger number of nodules in women is seen in all the individual figures from the several hospitals and also

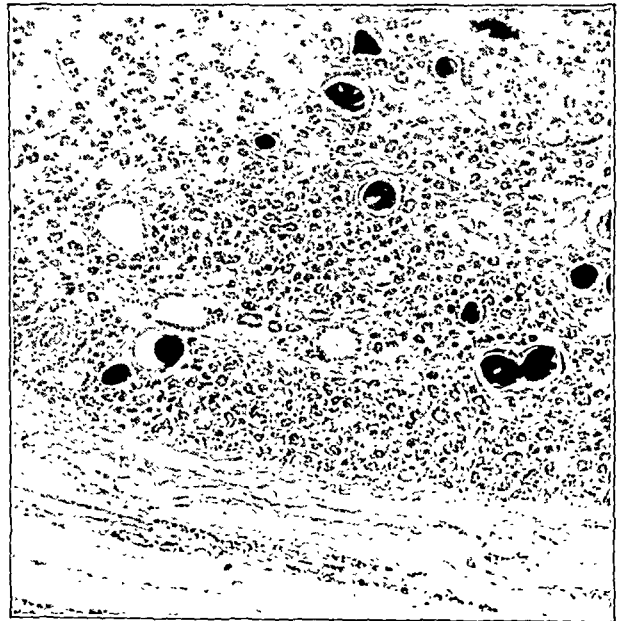


Fig. 2.—Section of fetal adenomatous nodule slightly reduced from a photomicrograph with a magnification of 100 diameters.

The increasing incidence of nodules in the thyroid gland with age and the marked increase over the age of 50, especially in women, are more sharply emphasized in table 2. Here the figures are arranged according to age in decades and according to sex. It will be noted that no nodules were found in the 144 glands from men under 40, whereas seven nodular thyroid glands were

6. Wegelin.¹ Hertzler.²

found in the 115 women in this age group. Thus, women not only show a higher incidence of thyroid gland nodules in a nongoitrous district but such nodules appear at a much earlier age than in men. In goitrous districts nodular thyroid glands are not uncommon even in young girls.⁷

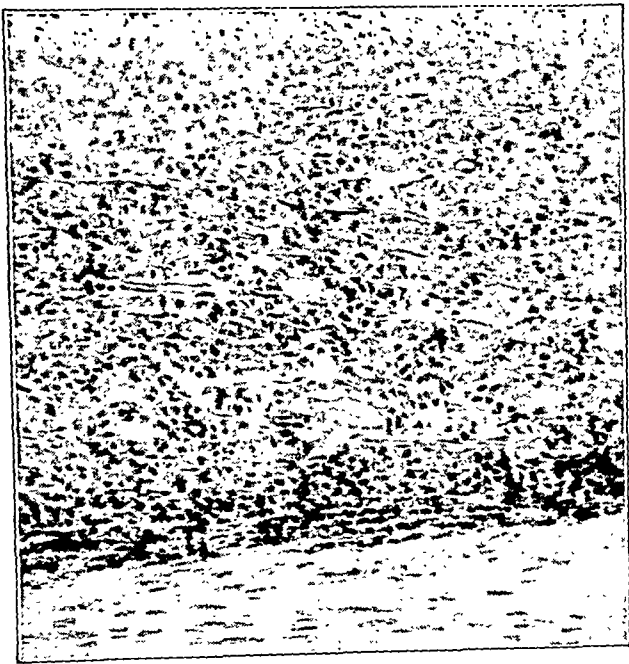


Fig. 3.—Section of embryonal adenomatous nodule slightly reduced from a photomicrograph with a magnification of 250 diameters.

Not wishing at this time to enter into the much disputed question as to the origin and nature of these nodules in the thyroid gland, or whether or not some or all of them are true neoplastic adenomas, we have indiscriminately classified all masses having the char-

TABLE 3.—Type Distribution of Nodules

Age	Sex	Colloid Nodules	Colloid Nodules with Degeneration	Fetal Adenomas	Malignant Neoplasms
20-29	♀	2	..	..	..
30-39	♀	..	1	..	1
40-49	♀	1	3	1	..
50-59	♀	1	6	2	3
60-69	♀	4	2	2	..
70-79	♀	1	3	3	1
80-89	♀	7	6	..	..
90-99	♀	1	5	2	..
100-109	♀	2	6	..	..
110-119	♀	..	2	1	..

acteristics already noted as nodules. In only seventy-four of the selected nodular thyroid glands were microscopic sections available. We have reviewed these slides and classified them according to the divisions we at present recognize. The classification is based on the predominating type of structure present, with full recognition that many of these nodules present a mixed tissue structure. Our grouping consists of four divisions: (1) colloid nodules, subdivided into those without and those with degenerative, but nonmalignant, changes; (2) fetal adenomas; (3) embryonal adenomas; (4) malignant neoplasms. The accompanying

photomicrographs illustrate these four types. In the present series no embryonal adenomas were encountered.

In table 3 is shown the type distribution according to age and sex of the seventy-four nodules examined microscopically. There is no striking difference in the nature of the nodules in the two sexes, which again emphasizes that in nongoitrous districts the sex of the patient is of less moment in the development of a nodule in the thyroid gland. The true malignant neoplasms, of which one was a sarcoma and five were carcinomas, occurred between the ages of 30 and 70, the usual cancer age. The few fetal adenomas encoun-

TABLE 4.—Comparison of Distribution of Type of Nodule of This Series and Series in Goitrous Region

	Rice Series	Present Series		
		Total	Male	Female
Colloid nodules without degeneration..	80.6%	28.2	17.9	34.8
Colloid nodules with degeneration.....	4.5%	50.0	60.7	43.5
Fetal adenomas.....	11.9%	13.5	17.9	10.9
Mixed type.....	3.0%	..	..	..
Malignant nodules.....	..	8.1	3.6	10.9

tered tend to be found in a slightly older age group, and the majority of the colloid nodules, both simple and those presenting degenerative changes, in distinctly older age periods.

In our series from one nongoitrous district a large proportion of the colloid nodules show degenerative changes. The nearest comparable group from a goitrous district is found in Rice's² report on sixty-seven thyroid glands with single nodules seen post



Fig. 4.—Section of carcinoma slightly reduced from a photomicrograph with a magnification of 65 diameters.

mortem. The percentage distribution of the types of nodules in these two series is compared in table 4. There is a strikingly greater degree of degenerative change in the colloid nodules in our series as compared to that found by Rice in a goitrous district, although the total percentage of such nodules is about the same. This is further evidence that in a nongoitrous district the etiologic factors for the formation and persistence

of nodules are more transitory as well as less common. The percentage incidence of so-called fetal adenomas is practically the same in the two series.

Malignant neoplasms are conspicuous by their absence in Rice's series despite the fact that it consists of single nodules in postmortem specimens of thyroid glands from a goitrous region. The total of six malignant tumors encountered in our series, as indicated, comprises 8.1 per cent of the seventy-four nodules the nature of which was determined microscopically. However, of these six tumors one was a sarcoma and the other five were definite carcinomas. These six tumors probably represent all the malignant neoplasms of the thyroid gland in the total of 1,371 thyroid glands examined post mortem, thus giving a crude incidence of 0.4 per cent of thyroid gland malignancy in the whole series. Also, the five carcinomas represent only 4.5 per cent of the 112 nodular thyroid glands encountered. This incidence coincides fairly well with that reported from other clinics. Thus, Speese and Brown⁸ give the incidence of malignancy as 4.6 per cent of nodular goiters, Walton⁹ as 3.2 per cent, and Pemberton¹⁰ as 2.7 per cent. Means,¹¹ in the most recent report from the Massachusetts General Hospital, gives the incidence of cancer of the thyroid as 3.2 per cent of nodular goiters.

SUMMARY

The relative frequency of nodular and nonnodular thyroid glands in a nongoitrous region has been studied by reviewing 2,185 recent complete autopsy protocols in three large teaching hospitals in Boston. In such a district, 8.2 per cent of thyroid glands adequately examined post mortem contained nodules which should have been clinically palpable, namely 1 cm. or more in diameter.

The incidence of such nodules was found to be higher in women than in men by approximately 2 to 1 in such a district.

Such nodules were rarely encountered under 30 years of age in either men or women. In women over 50 the average incidence of such nodules was 15.2 per cent, and close to 40 per cent in selected groups.

Most of these nodules were of the colloid type, and the majority of them showed nonmalignant degenerative changes.

Six malignant neoplasms (0.4 per cent) were found in the 1,373 adequately examined thyroid glands. In the 112 nodular thyroid glands, 4.5 per cent were carcinomatous nodules.

CONCLUSIONS

1. Under the age of 30 in a man or woman in a nongoitrous district a palpable nodule in the thyroid should be considered potentially malignant and be surgically extirpated.

2. Between the ages of 30 and 50 years, because of the general higher susceptibility to carcinoma, this potentiality becomes greater. A larger portion of such nodules, surgically examined at this later age, however, will prove to be benign.

3. After the age of 50, nodules in the thyroid are so common as to be almost physiologic, especially in women.

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8. Speese, J., and Brown, H. P., Jr.: The Malignant Degeneration of Benign Tumors of the Thyroid Gland, *Ann. Surg.* 74: 684 (Dec.) 1921.

9. Walton, A. J.: The Diagnosis of Malignant Disease of the Thyroid, *Lancet* 1: 650 (March 28) 1925.

10. Pemberton, J. DeJ.: Malignant Disease of the Thyroid Gland: A Clinical Consideration, *Ann. Surg.* 87: 369 (March) 1928.

11. Means, J. H.: The Thyroid and Its Diseases, Philadelphia, J. B. Lippincott Company, 1937.

RHINOSPORIDIOSIS IN THE UNITED STATES

REPORT OF A CASE ORIGINATING IN TEXAS

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AND

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Approximately one year ago, Dr. J. D. Roberts submitted for microscopic study an unusual polypoid mass removed by him from the nose of a patient residing in eastern Texas. The sections prepared from this mass revealed large endosporulating organisms in various stages of their development and obviously different from any organisms previously encountered in the study of surgical or of autopsy material. No great



Fig. 1.—Immature and mature forms of *Rhinosporidium seeberi* in polyp from nasal septum, including one ruptured sporangium with numerous recently discharged endospores in adjacent lesion.

difficulty, however, was experienced in finding adequate descriptions of these organisms and of the lesions which they produce. About the same time a paper on the pathology of rhinosporidiosis by Karunaratne¹ of the Ceylon Medical College appeared, covering the main features of the disease and its causative agent.

Rhinosporidiosis, as the name implies, involves most frequently nasal structures, especially the nasal septum. It is a comparatively rare disease of world-wide distribution, produced by a readily demonstrable endosporulating vegetable parasite known as *Rhinosporidium seeberi*. The disease has been recognized most frequently in India and on the neighboring island of

1. Karunaratne, W. A. E.: The Pathology of Rhinosporidiosis, *J. Path. & Bact.* 42: 193-202 (Jan.) 1936.

Ceylon. The first case of rhinosporidiosis, however, was reported by Guillermo Seeber² of Buenos Aires in 1900.

Thus far only six previous cases have been recognized and reported in the United States or, for that matter, in

moved with his father and mother to Kilgore, Texas, in 1931. The father and mother are living and well. No member of the family has done any traveling except in Texas and Oklahoma.

The patient complained of nosebleed from the right side of nose for three or four months. He had noticed a small mass in the right side of the nose for two months. Examination revealed a coarsely lobulated polypoid mass attached to the anterior superior part of the right side of the nasal septum.

The tumor, a reddish gray mass measuring 1.3 by 0.7 by 0.4 cm., was removed by Dr. J. D. Roberts, April 14, 1936.

Microscopic Changes.—Microscopic examination revealed that the polypoid mass was formed chiefly of an edematous, vascular fibrous tissue throughout which there were scattered many perfectly round, encapsulated cystlike structures varying in



Fig. 2.—Acute necrotizing lesion of suppurative type, bordered by epithelioid cells and containing the everted capsules of four ruptured sporangia. Large mature unruptured sporangium within an extension of the surface epithelium.



Fig. 3.—Encapsulated tubercle-like lesion with necrotic center, bordered by epithelioid cells.

North America, and definite records of only three cases are available for South America. Only a single case, in an Italian woman, has been reported throughout all of Europe, while at least eighty-eight cases have been studied and reported from India and Ceylon.

REPORT OF CASE ORIGINATING IN TEXAS

Clinical History.—P. C., a white schoolboy, aged 16, born in Duncan, Okla., where he lived until he was 11 years of age,

2. Seeber, G. R.: Un nuevo esporozoario parasito del hombre dos casos encontrados en polipos nasales, Tesis Universidad Nacional de Buenos Aires, 1900.

size from 40 to 300 microns, which were seen to represent various stages in the development of *Rhinosporidium seeberi*. These organisms were especially numerous just beneath the thinned covering of stratified squamous epithelium, through

Rhinosporidiosis in the United States

Case	Sex	Age, Years	Occupation	Place of Birth and Residence	Location of Lesion	Reported by
1	♂	29	Farmer	Vicinity of Memphis, Tenn.	Nasal septum, right side, and lower turbinate bone	Wright, Jonathan; New York M. J. 80:1149, 1907
2	♂	40	Not stated	Carthage, Ill.; Chicago, Florida, Iowa	Nasal septum, side not stated	Lincoln, Mary C., and Gardner, Stella M.: Arch. Path. 8:38, 1929
3	♂	26	Engineering student	Clarksdale, Mo.; Michigan	Nasal septum, right side, within the vestibule	Weller, C. V., and Riker, A. D.: Am. J. Path. 6:721, 1920
4	♂	17	Grocer's son	East St. Louis Ill.; Springfield, Mo.	Nasal septum, right side, near junction of cartilage and vomer	Hanson, W. L.: Ann. Otol., Rhin. & Laryng. 40:1012, 1931
5	♂	12	Coal miner's son	Farm in Georgia; New Castle, Ala.	Nasal septum, right side, upper anterior cartilaginous portion	Graham, G. S.: Am. J. Clin. Path. 2:73, 1932
6	♂	39	Naval reserve officer	Not stated, lived in many countries	Nasal septum, left side	Nees, O. R.: U. S. Naval M. Bull. 36:213, 1926
7	♂	16	Schoolboy	Duncan, Okla.; Kilgore, Texas	Nasal septum, right side, anterior superior part	Roberts, J. D., and Caldwell, G. T., 1938

which some of the sporangia had recently ruptured, discharging the released endospores over the outer surface of the tumor mass. In some of these superficial areas the organisms were so numerous that as many as fifty could be seen within the limits of a single low power field.

Many of the young or immature organisms possess a single ovum-like cell centrally placed, surrounded by a finely granular

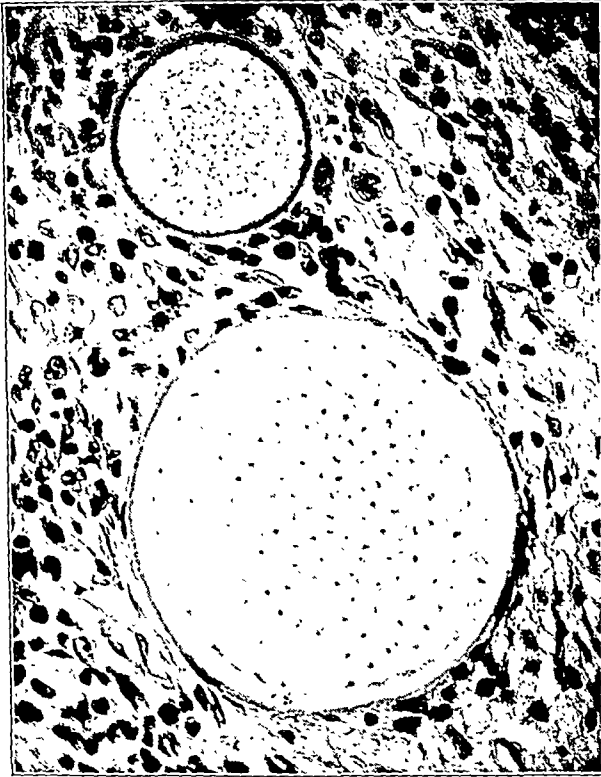


Fig. 4.—Large immature sporangia showing the formation of the endospores.

cytoplasmic mass. In slightly more mature forms, a network of orderly strands radiated out in all directions to the capsule. Definite chromatin particles appeared along these threadlike strands at a later stage, giving a reticulated appearance to the encapsulated substance. Many more mature organisms were present, in which the cytoplasmic contents were now definitely segmented to form the numerous endospores. These mature sporangia could be seen to contain many hundreds or even several thousands of the spherical endospores.

When the endospores were liberated from the sporangia within the supporting tissues of the polyp, the injury produced led to a localized area of necrosis, accompanied by an intense inflammatory reaction in which polymorphonuclear leukocytes predominated with scattered lymphoid cells and plasma cells. The capsules of the ruptured sporangia were conspicuous in these lesions; some appeared to have turned completely inside out as a result of the elastic properties of the ruptured capsules. A few of the older local lesions were proliferative in type with the formation of epithelioid cells and an occasional giant cell. These inflammatory processes with the resulting fibrosis largely accounted for the gradual increase in the size of the polypoid mass.

COMMENT

Location of Lesions.—In the seven North American cases, the lesions have been in the nose in every instance, and apparently at first on the nasal septum. They have been located most frequently on the right side of the nasal septum, near the junction of the cartilaginous and bony portions of the septum and situated well above the floor of the nares. In the eighty-eight cases reviewed

by Karunaratne, seventy-one were nasal, ten were conjunctival, three involved the lacrimal sac, one the uvula, one the external auditory meatus and one the penis.

Lesions Produced.—The more frequent nasal lesion is usually a pedunculated growth attached by a definite stalk to the mucous membrane, most often of the vestibular region. Multiple masses are not particularly uncommon. Some of these appear to be implantations on adjacent mucous surfaces. Recurrences are not infrequent following surgical removal.

According to Karunaratne, these polypoid masses are usually pink or red and the surfaces are often roughened by papillary projections. Mature sporangia projecting beneath the surface epithelium may be seen with the naked eye as minute white or translucent dots. Some of these sporangia rupture through the surface epithelium and discharge their numerous spores directly over the surface of the tumor mass, where they are incorporated in the mucous secretions. Smears of this mucus may be found to contain both the spores and the unruptured sporangia.

Ashworth³ in 1923 published a detailed account of the developmental cycle of the organism that is responsible for these lesions, wherever they occur throughout the world. He established the vegetable nature of the parasite and classified it among the Phycomycetes, giving the organism its present name, *Rhinosporidium*



Fig. 5.—Sporangia discharging mature spores through surface epithelium.

seeberi. According to Ashworth's description the earliest stage of the parasite is a round or oval cell about the size of a red blood cell. This cell has a peculiarly vacuolated chitinous membrane. As the organism grows, granules appear in the cytoplasm and when it

3. Ashworth, J. H.: On *Rhinosporidium Seeberi*, with Special Reference to Its Sporulation and Affinities, *Tr. Roy. Soc. Edinburgh* 53 (part 2): 301-342, 1923.

reaches a diameter of 50 or 60 microns mitotic division begins in the nucleus. Repeated mitotic divisions occur until about the 2,000 nucleus stage before the cytoplasm shows any evidence of division. With the maturation of the spores the sporangium enlarges until it reaches a diameter of about 200 to 300 microns. Only a variable proportion of the spores reach maturity, while the rest remain undeveloped. The matured spores occupy the periphery of the sporangium while the immature ones are at the center. When the thin film over the pore ruptures, some mucoid material is said to escape along with the spores.



Fig. 6.—Higher magnification of mature spores in mucus on the surface of the polypoid mass.

Mode of Infection.—Nothing definite is known about the modes of infection and transmission, except that the presence of infection in nearby sites is strongly suggestive of autoinoculation. Attempts have been made to account for the marked preponderance of the disease in males on an occupational basis but no very definite lead has been established, although several instances of the disease have been observed in farm animals, such as the horse, mule and bullock.

The organism has not been grown with certainty on artificial mediums and it has not been possible to transmit the disease to experimental animals, although rabbits, guinea pigs, mice and monkeys have been inoculated with materials containing the organisms.

SUMMARY

The case of rhinosporidiosis here reported is apparently the first of its kind known to have occurred in the Southwest. The causative agent, which is so conspicuous in the lesion, possesses all the morphologic features of *Rhinosporidium seeberi* as described by Ashworth and as found in previously reported cases throughout the world.

VASCULAR BIRTHMARKS

TREATMENT WITH INJECTION OF SCLEROSING SOLUTION

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Chiefly because of their cosmetic importance but also because of their hemorrhagic annoyance and occasional invasive and metastasizing propensity, vascular nevi should be eradicated early. There are two types commonly encountered in pediatric practice and readily amenable to treatment, the hemangioma cavernosum or strawberry birthmark, and the hemangioma hypertrophicum or hemangio-endothelioma.

The hemangioma cavernosum is a mass of convoluted arterioles and venules with many cystic dilatations and sacculations lined by a single layer of capillary endothelium filled with serum or blood. There is little connective tissue. The lesions may be flat or elevated above the adjacent skin or mucous membrane area. They may involve either the skin or subcutaneous tissue or both. Both skin and mucous membrane may be involved at the mucocutaneous junctions. When superficial, they are a brilliant scarlet; if deeply subcutaneous, blue. The surface is usually soft and papillomatous. The mass is spongy and, when firmly compressed, blanches.

The hemangioma hypertrophicum is a more cellular form of vascular nevus. In this lesion a prolific growth of vascular endothelial cells narrows or completely obliterates the lumen of the blood vessels. There are interspersed in the masses of cells cystic dilatations, as in the cavernous type of hemangioma, but relatively few in number. Being less vascular in structure the mass is pale blue or gray, not as spongy, and less compressible than the cavernous type. Lesions may be characteristic of both types.



Fig. 1.—Typical facial hemangioma: A, at age of 8 months. Therapy begun at 10 months. Lesions subjected to five injection treatments during subsequent three months. B, appearance of site of lesion at age of 4½ years, three years after treatment.

Generally these lesions are first observed at birth or shortly thereafter as tiny, apparently insignificant, red or bluish spots, attaining appreciable size after a few weeks. Cessation of growth and spontaneous involution may occur but there are no characteristic indications of this ultimate prognosis.

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Dr. F. D. Barnes, director.

Study of the origin and growth of these lesions by Ribbert, by injection methods, indicated that the vessels have few or no lateral anastomoses and that the growth of the tumor is by displacement and compression of the invaded parts. There is no direct extension to the healthy vessels of the neighboring areas. Injected material passes freely through the efferent and afferent vessels and does not enter the vessels of adjacent tissue. Explanations of the etiology appear to resolve into a vague "congenital tissue predisposition" as suggested by Ewing. Apparently the tumor process is largely one of hyperplasia of the vascular segments, producing elongation and dilatation of the vascular wall, resulting in varicosities and sacculations. Change to malignancy is not common.

The naevus vinosus (portwine birthmark, naevus flammeus) is at times classed with the hemangiomas but is different in structure. These growths are really telangiectases containing varying amounts of pigment. Present at birth, they rarely undergo progression. They are not amenable to treatment, although improvement occasionally results after quartz water cooled ultra-violet irradiation. Cosmetic preparations are gen-

vein sclerosing therapy to hemangiomas. He used a 5 per cent aqueous chloral hydrate solution. deBarnes of France employed 25 per cent quinine hydrochloride and 25 per cent antipyrine solution in 1927. Augé and Cotsaftis² in 1928 had success with quinine hydrochloride and ethyl carbamate (urethane). S. E. Light,³

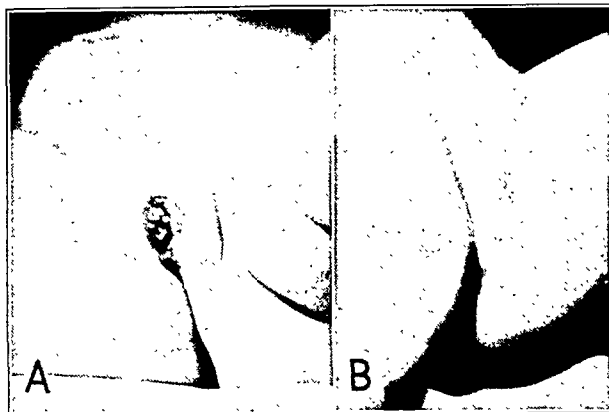


Fig. 3.—Sloughing hemorrhagic hemangioma of the labia majora: *A*, appearance when infant was 3½ months old. Three treatments were given during the subsequent six months. *B*, appearance at 15 months, one-half year after last injection.

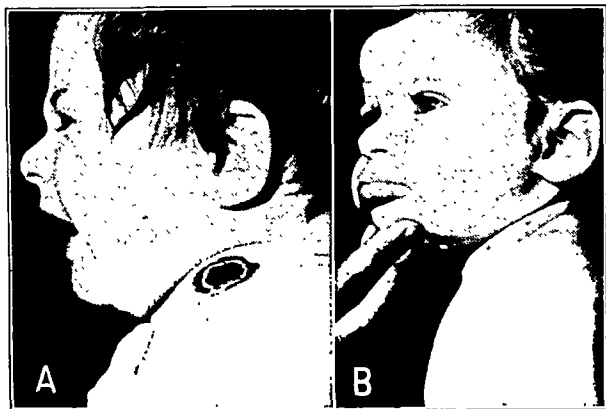


Fig. 2.—Sloughing hemangioma of neck: *A*, at age of 7 months. Subjected to four treatments during following three months. A small lesion of the left upper eyelid can be discerned. *B*, lesions when child was 14 months old. The lesion of the eyelid was subjected to two cautious injections.

erally advocated to cover the blemish, treatment directed toward eradication usually being futile.

Diffuse, irregular, flat, pale red areas of telangiectases are commonly observed at birth over the nape of the neck, over the occipital scalp, over the midfrontal area and about the nose. When compressed they blanch; with crying, their color is intensified. These usually regress spontaneously without treatment.

The common methods of treatment of hemangiomas advocated by textbooks are not practical for ordinary use. Though detected early, treatment of the lesions is often held in abeyance. Electrical desiccation, refrigeration with carbon dioxide snow, heat cauterization, chemical cauterization (phenol or nitric acid) and curettage are all drastic measures producing sloughing and not infrequently unsightly scar or keloid formation. Radium treatment is costly. Because of their common occurrence in pediatric practice, a simple method of treatment, available to the average physician, was sought and has proved most successful in my hands.

Juaristi,¹ a Spaniard, appears to have been the first to describe his application in 1925 of the recent varicose

of Tacoma, Wash., reported a case in 1931 treated successfully with injection of 30 per cent sodium salicylate and invert sugar solution. Andrews and Kelly⁴ in 1932 used 20 per cent quinine hydrochloride and ethyl carbamate, sodium chloride and 50 per cent dextrose solutions with success. No untoward effects are mentioned in their reports.

The injection treatment of hemangiomas can be employed in office practice or clinics inexpensively and with excellent ultimate results comparable to or superior to other methods generally used. After trial of several solutions, 20 per cent quinine dihydrochloride and urethane diluted with an equal part of

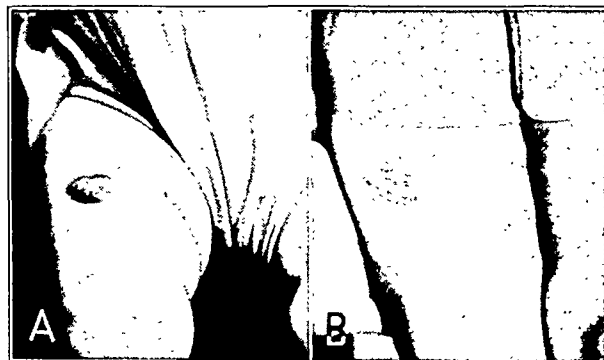


Fig. 4.—Typical hemangioma of the thigh: *A*, appearance when girl was 10 months old. Three treatments were given during the next three months. *B*, appearance at 20 months, seven months following last treatment.

2 per cent procaine hydrochloride (with epinephrine) was found painless and most effective. The subjects were largely infants. The procedure was the injection

2. Augé, A., and Cotsaftis, G. G.: Angioma de la lèvre inférieure, traité par les injections de quinine uréthane, *Arch. Soc. de sc. méd. et biol. de Montpellier* 9: 84-86 (Feb.) 1928.

3. Light, S. E.: Injection Treatment of Cavernous Hemangiomas: Report of Case and Historical Review, *Arch. Dermat. & Syph.* 24: 992-998 (Dec.) 1931.

4. Andrews, G. C., and Kelly, R. J.: Treatment of Vascular Nevi by Injection of Sclerosing Solutions, *Arch. Dermat. & Syph.* 26: 92-94 (July) 1932.

1. Juaristi, V.: Cure of Angioma by Injecting Few Drops of Chloral, *Arch. españ. de pediat.* 9: 96-102 (Feb.) 1925.

through a 26 gage short bevel security type hypodermic needle along radial paths from a single injection site. This needle has a metal bead incorporated in the shaft adjacent to its attachment to the hub. It allows the needle to be easily retrieved if broken. A half cubic centimeter vaccine or tuberculin syringe allows accurate control of the solution injected. The needle is so

puncture. If the lesion is very irregular in outline or its diameter is greater than the length of the needle chosen, other injection sites may be chosen. A small gauze pad is applied firmly over the entire injected area with adhesive tape. The dressing is removed after from forty-eight to seventy-two hours and the area left exposed. If too much solution has been injected there may be central sloughing, but these areas generally heal uneventfully although more ultimate scarring results. A month after the initial treatment the lesion should be blanching satisfactorily or there may remain scattered areas of angioma which are beginning to grow afresh. These are then injected individually and after another month has passed one observes that there appears no longer a tendency for growth and that the mass is being replaced by a glistening naturally colored or light brownish epidermis, which in time, according to the area involved and the age of the subject, becomes



Fig. 5.—Section of hemangioma hypertrophicum.

directed that the solution is initially injected superficially throughout the mass. From 0.1 to 0.2 cc. is injected at a time. Immediate blanching of the area occurs about the needle point. The needle is then advanced and the next injection is placed so that its area of blanching is contiguous with the previous one.



Fig. 6.—Section of hemangioma cavernosum.

Multiple areas are thus injected until the entire lesion has been mottled with areas of blanching. The point chosen for injection often bleeds, but a few minutes pressure with gauze or a drop of collodion will seal the

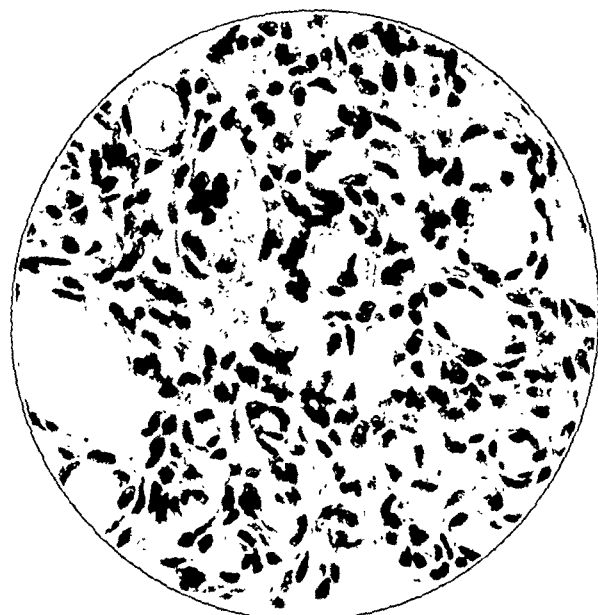


Fig. 7.—Highly vascular section of a cavernous lesion under high power.

inconspicuous. It is at times necessary to inject more deeply into the mass if it is quite elevated after the superficial portion has been dealt with. In small hemangiomas of the papillomatous type one may observe complete blanching of the mass with one injection into the base if the injected solution chanced to flow into the afferent vessel. From one to six treatments may be necessary.

Forty-four hemangiomas in thirty subjects have been treated as described, all with excellent ultimate results. The ages were from 2 weeks to 3 years. There were no systemic reactions. A few sloughs occurred in my early experience, but these healed without significant extra scarring. The lesions have varied in size from 1.5 to 38 mm. They have involved the scalp, forehead, eyelid, auricle, lips, chin, cheek, neck, torso, genitalia, all parts of the extremities, and the buttocks. Several were sloughing spontaneously and infected before treatment was started. There were no recurrences after from two to four and one-half years.

With such relatively safe, simple, effective and inexpensive a form of treatment, vascular nevi should not be allowed to achieve any appreciable size. Treatment of very extensive and complicated lesions involving

deeper tissues should not be attempted by this method. Radium treatment is then more practical and effective.

Photographic illustrations of a few of the more severe lesions before and after treatment are reproduced.

CONCLUSION

Strawberry birthmarks (hemangioma cavernosum) and other vascular nevi are often neglected because the usual methods of treatment are unpractical, expensive, or require special knowledge or equipment.

A simple method of injecting sclerosing solution to obliterate these nevi has been developed.

The results of the injection method of treatment of selected lesions compares favorably with, or is superior to, other methods.

Its simplicity is conducive to preventive treatment and therefore provides an effective means of obliteration of birthmarks, available to any practitioner.

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RUPTURE OF AN AORTIC ANEURYSM INTO THE PULMONARY ARTERY

REPORT OF A CASE

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Aortic aneurysm, always an interesting clinical and pathologic condition, is fairly common. However, an aortic aneurysm which ruptures into the pulmonary artery remains sufficiently unusual to warrant this brief report.

Perforation of a thoracic aneurysm into blood vessels of the thorax is not particularly frequent, and rupture into the pulmonary artery is still less frequent. Thurman¹ in 1840 published the first important discussion on this subject, outlining the clinical features of abnormal communication between the aorta and the pulmonary circulation. Discussions of the clinical picture, case reports and summaries of cases previously recorded have been published by Kappis,² Peacock,³ Taylor,⁴ Korb⁵ and Potter.⁶ A case report has appeared in the Italian literature and another in the French literature during the past two years.

Stevenson⁷ found only three such cases in a series of 3,900 autopsies performed in the Johns Hopkins Hospital. Boyd⁸ reported forty-five in a total of 1,197 cases of ruptured aneurysm. This series was collected in a comprehensive study of the literature. Lemann⁹

collected 592 cases of ruptured aortic aneurysm, in eighteen of which the aneurysm had ruptured into the pulmonary artery. It seems likely that some of the cases reported by Boyd were included in Lemann's series. Potter, in a case report appearing in 1934, said that he had been able to find only fifty-four authentic accounts of this pathologic anatomic rarity. In his series of 1,726 autopsies at St. Luke's Hospital, Chicago, he saw only six thoracic aneurysms, an incidence of 0.35 per cent. Of these, three had ruptured into the superior vena cava and another into the pulmonary artery. In a series of 6,099 autopsies at the University of Kansas Hospitals between 1914 and 1936, eighty-two thoracic aneurysms were observed. Forty-six had ruptured, only one into the pulmonary artery.

REPORT OF CASE

History.—W. M., a Negro man, married, aged 40, an electric crane operator, was admitted Dec. 30, 1935, to the medical service of the University of Kansas Hospitals. His chief complaints were shortness of breath, pain in the chest and rapid heart action. The family history was not significant. The patient's first wife had eight pregnancies, two ending in miscarriages. No details were available concerning these. Six children were living and well. The second marriage was of two years' duration, and there had been no pregnancies. The patient had used no alcoholic beverages, did not use tobacco and seldom drank tea or coffee. He had suffered the usual childhood diseases, including measles, mumps and frequent attacks of tonsillitis. A vague history of joint pain, involving chiefly the hip joints, at approximately the age of 18 could not be interpreted as rheumatic fever. The patient said that he had not had a syphilitic infection; however, he had had gonorrhea. An automobile accident eight years before had resulted in an injury to the left leg which necessitated amputation just above the knee. The patient had engaged in the usual activities without any unusual symptoms until the onset of the present illness. Previous to the amputation of his leg he had enjoyed athletics and had played baseball on several amateur teams. Until five months prior to hospitalization he had worked regularly as an electric crane operator, and after that he had continued to work at irregular intervals until the onset of his acute symptoms. He had lost 21 pounds (9.5 Kg.) in weight during the past five months. This loss no doubt was occasioned by the failure of his appetite and his gastric distress.

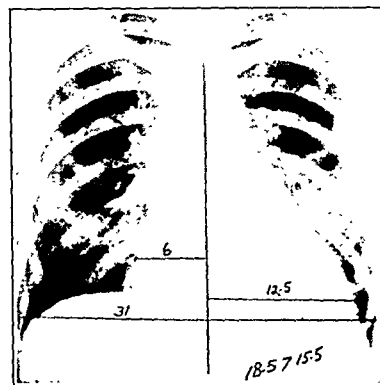


Fig. 1.—Appearance of the chest.

Seven months before hospitalization, while digging a cellar at his home, the patient for the first time noted moderate shortness of breath. His complaints, then made known to the family, were not considered serious. He continued to work for about two months before taking a vacation. During his vacation his shortness of breath on exertion became more serious, and on several occasions he complained of severe pressure beneath the sternum and in the precordial region. After returning from his vacation he resumed work, but his symptoms were progressive. Frequent gastric upsets, with indigestion, nausea and vomiting, led him to try the usual home remedies, but without relief. An attack of paroxysmal dyspnea associated with severe substernal pressure pain radiating to the back seized him just three weeks before he was hospitalized. This attack followed immediately after a meal and was interpreted as another gastrointestinal difficulty; consequently

From the Departments of Medicine and Pathology, University of Kansas School of Medicine.

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8. Boyd, L. J.: Aneurysm of the Thoracic Aorta, *Am. J. M. Sc.* 165: 654-668 (Nov.) 1924.

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medical attention was not sought. Similar minor episodes happened frequently during the next few days. Orthopnea was a negligible symptom. At no time did the patient note edema of his lower extremity or complain of the typical anginal type of pain, with radiation down the left arm.

He sought medical attention for the first time and was seen in the outpatient department. Here he was given digitalis, and during the following week he took fifteen 1½ grain (0.1 Gm.)

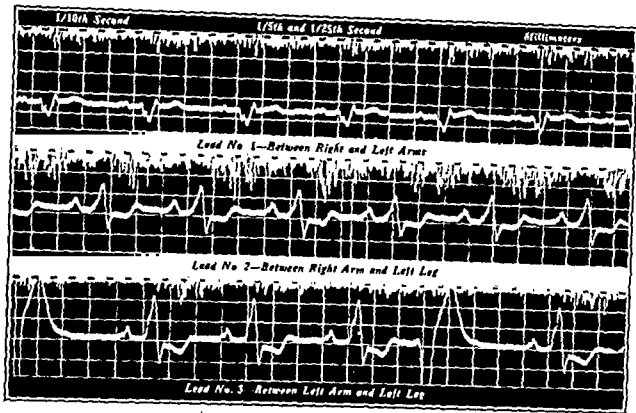


Fig. 2.—Abnormalities in form of waves noted December 31.

tablets of this drug. On his return, since no improvement whatever was noted, he was immediately hospitalized.

Examination.—The patient, who was fairly well nourished and well developed, lay in bed with an expression of apprehension and an appearance of shock. He was dyspneic, very restless and perspiring profusely.

The pupils were small and irregular. They reacted fairly well to accommodation but showed no reaction to light. The ears, throat and nose were normal. The upper teeth were artificial and the lower much repaired. Adenopathy was not present in the neck. There was slight pulsation of the vessels in the neck. The thyroid was not enlarged. The respirations

Thoracic Aneurysms; the Incidence and Location of Ruptures

	Lemann	Boyd	Steven-son	Potter	Univ. of Kansas
Number of autopsies.....	2,000	*	3,900	1,727	6,099
Number of thoracic aneurysms....	52	4,000	.....	6	85
Number of ruptured aneurysms....	11	1,197	.....	3	46
Number ruptured into:					
Pericardium.....	2	369	.....	..	28
Left side of thorax.....	2	214	.....	1	13½
Right side of thorax.....	1	100	.....	..	..
Bronchial tree.....	3	171	.....	..	1
Esophagus.....	3	112	.....	..	1
Pulmonary artery.....	..	45	3	1	1
Superior vena cava.....	..	44	.....	1	..
Mediastinum.....	..	20	.....	..	3½
Base of neck.....	..	1	.....	..	1
Chest wall.....	..	4	.....	..	1
Miscellaneous.....	..	117	.....	..	..

* Included only thoracic aneurysms.
† In two cases the aneurysm ruptured into the pericardium, in one into the mediastinum and in one into bronchus.
‡ In one case the aneurysm ruptured into the lung.

were labored but regular, and the respiratory rate was 30. The vocal and the tactile fremitus were not considered abnormal. Moderate dullness over the base of both lungs was noted. The diaphragmatic excursion was normal. Numerous moist rales could be heard over the base of both lungs posteriorly.

On examination of the heart a heaving diffuse apex beat was heard. A definite short systolic thrill was palpable over the base. By percussion the heart was found to be enlarged 2 cm. to the left of the midclavicular line, and dullness extended to just beyond the right sternal border. In the pulmonic area dullness extended upward and laterally, suggesting a dilated pulmonary conus. By auscultation, a loud, harsh machinery-like systolic murmur and a soft diastolic murmur were heard best at the fourth left interspace. This murmur, however, was transmitted over the entire precordium. It was not to be

heard in the vessels of the neck. The blood pressure was 144 systolic, 64 diastolic. The pulse was regular and rhythmic, the rate being 94.

There was definite tenderness in the upper right quadrant of the abdomen, with moderate rigidity. Neither the liver nor the spleen nor the kidneys were palpable. The peripheral vessels of the extremities did not evidence sclerosis. The extremities were cold and clammy. There was no clubbing of the fingers and no cyanosis. The stump of the left leg was rough and scarred but well healed. The right leg showed no anomalies of development and no edema. The patellar reflex was not elicited. The remaining reflexes were normal.

The urine gave an acid reaction, had a specific gravity of 1.030 and contained a faint trace of albumin. There were from 4 to 5 pus cells to a high power field and no casts. Examination of the blood showed 6,150 white cells, 84 per cent hemoglobin and 66.6 mg. of nonprotein nitrogen, 0.7 mg. of creatinine and 197 mg. of sugar per hundred cubic centimeters. Subsequent examination showed 134 mg. of nonprotein nitrogen, 5.5 mg. of creatinine and 100 mg. of sugar. The Wassermann and the Kahn reactions were 4 plus.

In a 6 foot roentgenogram of the chest taken December 24 (fig. 1), the cardiac shadow measured 18.5 cm. in the greatest transverse diameter; one-half the inside diameter measured 15.5 cm. These measurements indicated that the heart was well over the normal limits in size. The hypertrophy was primarily on the left side. There was a prominence on the upper part of that side due to the pulmonary conus. No evidence of intrinsic pathologic changes in the lungs or of decompensation was seen. The aorta was narrow. No evidence of rib erosion was visible. Fluoroscopic examination showed that the left auricle was displaced posteriorly a little. A differ-

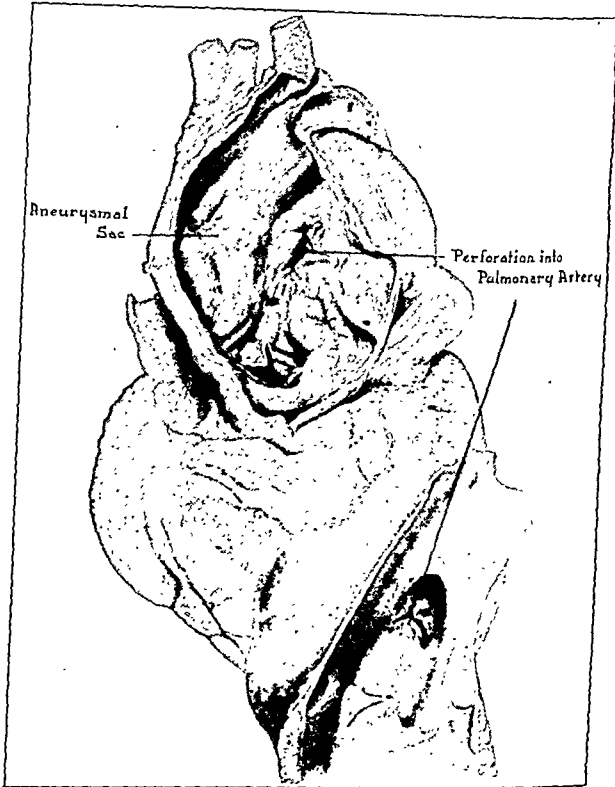


Fig. 3.—Drawing of specimen, showing aneurysmal sac with perforation into the pulmonary artery.

ential diagnosis had to be made between a pulmonary conus thrown into silhouette by an enlarged left auricle and primary hypertrophy of the conus. It seemed to us that mitral involvement with the changes described on the left side would have caused more hypertrophy on the right side than was seen. The possibility of a patent duct of Botallo had to be seriously considered.

An electrocardiogram made December 28 (fig. 2) showed right axis deviation. The QRS, which was widespread, notched and bizarre, measured 0.14 second. The PR interval measured 0.21 second. T_2 and T_3 were diphasic. Left ventricular extrasystoles were seen in lead 3. The sound record showed a machinery-like murmur, with accentuation in the systole and heard best at the pulmonary area. An impression was given of organic myocardial damage, with strain on the right ventricle or failure of the left ventricle. On December 31 the rate averaged 130. An electrocardiogram showed that the waves were greatly changed. The QRS was spread to 0.16 second. The T and the P waves were apparently together. The sound record showed a machinery-like murmur, as before. An impression was given of organic myocardial damage, with a changing form of ventricular complex.

Course.—After the patient's admission he grew progressively worse, responding to no type of therapy. He was restless and apprehensive, had a distinctly subnormal temperature and perspired profusely. For the twelve hours preceding death he had a very slow, weak pulse and it was impossible to get an accurate measurement of the blood pressure. He died approximately forty-eight hours after admission.

The x-ray examination, coupled with the examination of the heart, led to a possible diagnosis of congenital heart disease with a patent ductus arteriosus. The history gave little credence to such a diagnosis. The positive serologic reactions and the appearance of the pupils led to a clinical diagnosis of syphilitic heart disease, the true nature of which was suspected.

Autopsy.—This was performed eight and one-half hours after death. When the thoracic cavity was opened 300 cc. of clear fluid was observed on the left side. The pericardial sac contained 150 cc. of a serosanguineous fluid and many petechial hemorrhages, together with a thin fibrinous exudate. The heart was globoid and enlarged, weighing 750 Gm. Several milk patches were noted over its pericardial surface. The walls of the ventricles were hypertrophied, the left measuring 2 cm. and the right 8 mm. in thickness. The valvular rings and the cardiac chambers were all dilated. The tricuspid valve measured 14 cm. in circumference and the mitral valve 12 cm. The coronary arteries were patent and showed no evidence of sclerosis.

The ascending aorta was irregularly dilated, measuring 12 cm. in circumference at its widest portion, which was 4 cm. above the aortic ring. A few small sacculations could be seen in the ascending portion. Approximately 4 cm. above the aortic valve there was a slitlike perforation about 2 cm. in length in the wall of the aorta (fig. 3). The margins of this opening were rough, jagged and covered with fibrin and blood, communicating directly with the lumen of the left pulmonary artery about 3 cm. before its bifurcation. The wall of the aorta in this region was thin, and its external surface was covered with a grayish exudate. The intima of the arch of the aorta showed atheromatous plaques and distinct longitudinal wrinkling and puckering throughout its length. The aneurysm involved the ascending aorta and part of the aortic arch. The following circumferences give some idea of the size of the aorta: ascending portion 12 cm., transverse portion 8.5 cm., and descending portion 5 cm.

Microscopic examination of sections from the aortic arch revealed a typical picture of syphilitic mesaortitis, with a thickening of the vessel walls in the media and a perivascular infiltration of mononuclear cells. Irregular puckered scars were scattered throughout in the region of the vasa vasorum. The heart muscle itself showed some fragmentation and segmentation of the muscle fibers, with an increased amount of fibrous tissue scattered throughout the myocardium. The lungs showed evidence of edema and chronic passive congestion. The other organs showed no significant pathologic changes.

The cause of death, from the anatomic standpoint, was evidently cardiac failure brought about by an unusual complication associated with syphilitic mesaortitis. The ascending arch of the aorta showed fairly characteristic syphilitic changes, and a beginning aneurysm formation ruptured near the root of the aorta into the first portion of the pulmonary aorta, producing

an artificial fistulous connection between the two aortas and a condition that is similar to patent duct of Botallo. These conditions could account for the unusual clinical observations.

COMMENT

Articles written by Kappis,² Taylor⁴ and Scott¹⁰ contain a most complete and definite clinical picture of the symptoms and signs of aortic aneurysm rupturing into the pulmonary artery. If this picture was kept well in mind, a diagnosis no doubt could be made. While the rupture of an aortic aneurysm is as a rule promptly fatal, perforation into the pulmonary artery frequently is not. This was true in our case. It is not unreasonable to assume that our patient had had practically all of his pathologic changes since three weeks before hospitalization, the date of the onset of his acute symptoms.

In reviewing the salient features of the clinical course and the physical examination in reported cases we find that the onset is always abrupt and usually follows exertion. Severe substernal pain, anginal in character, leads frequently to a diagnosis of coronary occlusion. A feature noted in practically every case is breathlessness, with marked apprehension and evidence of shock. Severe cough and edema of the lower extremities are frequent, although neither was present in the case reported. As a rule the clinical course is that of progressive circulatory failure, death occurring in a few weeks or at most a few months.

Rupture into the pulmonary artery creates an arteriovenous aneurysm, the physical signs of which are easily interpreted. The similarity of the picture to that of the congenital anomaly patent ductus arteriosus is evident. A characteristic physical sign is a continuous machinery-like or humming-top type of systolic murmur, heard loudest over the pulmonic area and transmitted over the entire precordium. A systolic thrill, noted in the region of the murmur's greatest intensity, is often palpable. Both of these signs were definite in the case reported. A diastolic murmur at the third left interspace is common, and so is accentuation of the second pulmonic sound. Cyanosis, distention of the veins, and edema of the face and neck are not always present. It is not always possible to elicit signs of an aneurysm, because the sac is frequently small and does not project beyond the base of the heart. X-ray studies frequently do not aid in the diagnosis. In our studies, roentgenograms of the chest revealed only what appeared to be a dilated conus, lending support to a diagnosis of congenital heart disease. The possibility of this condition presents the major differential problem. In our case the preponderance of evidence favored syphilitic aortitis, with aneurysmal involvement making the diagnosis of congenital heart disease unlikely.

10. Scott, R. W.: Aortic Aneurysm Rupturing into the Pulmonary Artery, *J. A. M. A.* 82: 1417-1420 (May 13) 1924.

The Fifty-Nine Millionth Year of Primate Life.—Our first absolute proof of the existence of man upon the earth occurs about at the completion of the fifty-nine millionth year of primate life, just before the onset of the great glacial period. Stone implements, very crudely chipped, but evidently fabricated by human hands, afford mute evidence that our ancestors were in existence, at work, and apparently making a rather poor job of it. It is not until the first quarter or possibly the first half of the million year glacial period has elapsed that we actually find the bones of man.—Hooton, E. A.: *Apes, Men, and Morons*, New York, G. P. Putnam's Sons, 1937, page 275.

MERALGIA PARAESTHETICA

A REPORT OF ONE HUNDRED AND FIFTY CASES

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In 1895 Bernhardt¹ directed attention for the first time to a curious condition, marked by numbness, on the anterior and especially on the outer surface of one thigh, which became relatively painful only after prolonged exertion or on pressure on the abnormally sensitive regions. In the cases that he reported there was no history of bouts of pain which occurred spontaneously during rest. Shortly afterward Roth² gave the disease its formidable title, "meralgia paraesthetica," from the Greek words *meros* (thigh) and *algos* (pain). It is our purpose in this paper to review the present status of this disease and to analyze the clinical observations on a series of cases that have been studied under standard conditions for a moderately long time.

MATERIAL

Our study was directed to the records of 150 cases of meralgia paraesthetica observed at the Mayo Clinic. The incidence of this condition among patients observed at the clinic in the period covered by this study was 0.035 per cent, or about three in 10,000. This figure can be compared with 0.94 per cent, or 4,293 cases of sciatica, and with 1.16 per cent, or 5,316 cases of other forms of peripheral neuritis recorded during the same period.

ANATOMIC CONSIDERATION

The lateral femoral cutaneous nerve is entirely sensory and is derived from the posterior roots of the second and third lumbar nerves on the corresponding side. After emerging from the lateral aspect of the psoas major muscle, the nerve crosses the iliacus muscle and continues toward the anterior superior spine of the ilium by turning upward sharply from the deep circumflex iliac vessels and passing beneath the fibrous attachment of the internal oblique muscle of the abdomen. It usually continues medial to the anterior superior spine of the ilium and under the inferior portion of the inguinal ligament but may pass under or even lateral to the origin of the sartorius muscle.³ As it emerges from the pelvis there occurs a marked angulation of the nerve which is increased by extension and lessened by flexion of the thigh.⁴ The nerve passes inferiorly and, about 4 cm. below the inguinal ligament, it pierces the fascia lata; the arcuate fibers of this fascia tend to protect this nerve from compression. The main or anterior branch remains beneath the fascia of the thigh, becomes superficial about 9 cm. below the inguinal ligament and supplies the skin of the thigh down to the knee. The small posterior branch soon becomes superficial and supplies the skin from the greater trochanter down to the area supplied by branches from the anterior division.

From the Section on Neurology, the Mayo Clinic.

1. Bernhardt, Martin: Ueber isolirt im Gebiete des N. cutaneus femoris externus vorkommende Parästhesien, *Neurol. Centralbl.* 24: 242-244 (March 15) 1895.
2. Roth, V. K.: Meralgia Paraesthetica, Physico-Medical Society of Moscow, March 20-April 1, 1895; brochure in German: Meralgia paraesthetica, Berlin, S. Karger, 1895.
3. Stookey, Byron: Meralgia Paraesthetica: Etiology and Surgical Treatment, J. A. M. A. 60: 1705-1707 (May 26) 1928.
4. Lee, F. C.: Meralgia Paraesthetica, *Internat. Clin.* 1: 210-229 (March) 1936.

ETIOLOGY AND PATHOGENESIS

The numerous theories that have been proposed to explain the origin of this disease can be divided into those which consider it an evidence of a generalized toxic or infectious process and those which regard it as of local origin. It may well happen that the two act together. This is clearly illustrated in ulnar neuritis and peroneal neuritis, which may develop during the later stages or after an attack of typhoid. The neuritis usually has been attributed solely to selective toxemia, but the factors of loss of weight and local pressure are probably of greater importance.⁵

Distribution According to Age.—Because the symptoms of meralgia paraesthetica may persist for years, it seemed advisable to consider the ages of the patients at the time they first came to the clinic. At the extreme ages were two patients aged 15 years and three patients aged 65 years. Four patients were in the second, nineteen were in the third, thirty-five were in the fourth, forty-four were in the fifth, thirty-five were in the sixth and thirteen were in the seventh decades of life, respectively. Meralgia paraesthetica therefore starts in middle age.

Distribution According to Sex.—Of the 150 patients in our study, 111, or 74 per cent, were males, and thirty-nine, or 26 per cent, were females; therefore the ratio of males to females was 2.8:1. A study of the clientele of the Mayo Clinic as a whole revealed that the ratio of males to females was 1.04:1.⁶ It therefore is clear that meralgia affects males about three times as frequently as it affects females.

GENERAL CAUSES

The array of infectious diseases and toxic conditions which have been associated with meralgia can be found in the former reviews on the subject.⁷ However, no one of these conditions, such as diabetes or a focus of chronic infection, has been present appreciably enough in our series of cases to be considered a specific causative factor.

Obesity.—Roth observed that meralgia was most frequent among those who are somewhat obese. The average weight of 136 of our patients, estimated at the onset of the meralgia, was 175.1 pounds (79.5 Kg.). This is clearly in excess of the average weight of middle-aged men and women, as determined by a standard weight chart. Although these figures are not statistical proof that obesity is causally related to meralgia, the association of the two conditions is suggested and is given further support by the following facts: Three patients gained about 15 pounds (6.8 Kg.), and eight patients gained 20 or more pounds (9 Kg.) at the time that the symptoms of meralgia began.

When posture, which is not dependent on weight but on its distribution,⁸ is altered by obesity, it must make greater demands on the inguinal ligament and fascia of the thigh. As a result, these structures may compress the nerve in its fascial bed at the anterior superior spine of the ilium, or the panniculus may exert traction on the nerve.

5. Woltman, H. W.: Pressure as a Factor in the Development of Neuritis of the Ulnar and Common Peroneal Nerves in Bedridden Patients, *Am. J. M. Sc.* 179: 528-531 (April) 1930.
6. Alvarez, W. C., and Ascanio, Hugo: The Age and Sex Distribution of Patients at the Mayo Clinic, *Human Biol.* 2: 185-198 (May) 1930.
7. Kilmke, Wilhelm: Die Meralgia paraesthetica, *Deutsche Zeitschr. f. Nervenheil.* 110: 95-105 (Sept.) 1929. Musser and Sailer,¹² Lee.⁴
8. Phelps, W. M., and Kipphuth, R. J. Jr.: The Diagnosis and Treatment of Postural Defects, Springfield, Ill., Charles C. Thomas, Publisher, 1932.

LOCAL CAUSES

Analogous Conditions.—Neuritis which affects an isolated sensory nerve is distinctly uncommon. The first so-called sensory mononeuritis clearly described in the literature is the very subject of our discussion. However, involvement of the superficial branch of the radial nerve at the wrist was described by Wartenberg⁹ in 1932; involvement of the external inferior cutaneous branch of the musculocutaneous nerve was described by Gordon¹⁰ in 1909; involvement of the medial femoral cutaneous nerve was described by Escat¹¹ in 1895 and by Remark¹² in 1900; involvement of the greater saphenous nerve was described by Ballet¹² in 1896 and by Kutner¹² in 1905; an involvement of the superficial peroneal nerve was described by Kutner in 1905. In none of these reports was a clear cause designated, but it is interesting to observe how frequently local causes were mentioned; for instance, Wartenberg, in attempting to explain neuritis of the superficial branch of the radial nerve at the wrist, which he designated "cheiralgia paraesthetica" because of its apparent similarity to meralgia paraesthetica, suggested the pressure of a wrist-watch band as the cause in two of his three cases. Gordon expressed the opinion that the condition he described might well have been caused by irritation of the nerve by the supinator longus muscle.

Lesions Within the Spinal Canal or Intervertebral Foramina.—The factors that might affect the nerve locally may now be subdivided. In our series there were five cases in which the primary lesion apparently affected the nerve roots within the spinal canal. In two of these cases the condition was diagnosed as multiple sclerosis. In the third case the meralgia was a residuum of radiculitis. In the fourth case the illness had begun with empyema thoracis, which had been followed by a perinephric abscess and then by an osteitis of the second and third lumbar vertebrae. Laminectomy revealed arachnoidal adhesions, which were freed. When the patient returned to the clinic nine years later he did not complain of meralgia. In the fifth case acute bilateral meralgia paraesthetica developed shortly after the use of spinal anesthesia. Intermittent spasms of the tensor fasciae latae muscle were associated with the meralgia. Three months later the inner aspects of the thighs, as well as the outer, became anesthetic and painful at night and when the patient was on his feet. In 1925 Rosenheck¹³ stated his opinion that meralgia paraesthetica is the expression of a radicular syndrome secondary to osteo-arthritis of the spinal column. He also said that in practically all his cases there was definite roentgenologic evidence of an osteo-arthritic process.

In an effort to shed light on this question, we reviewed the roentgenologic studies in the eighty-three cases in which roentgenograms had been made of the lumbar vertebrae. This review disclosed normal lumbar vertebrae in thirty-eight cases, hypertrophic arthritis of the lumbar vertebrae in twenty-five cases, spina bifida occulta in seven cases, scoliosis of the thoracolumbar vertebrae in four cases (two of these

cases are included under hypertrophic arthritis), local changes of the second and third lumbar vertebrae in four cases (one of these cases is included under spondylolisthesis), sacralization of the fifth lumbar vertebra in two cases, spondylolisthesis of the fifth lumbar vertebra on the sacrum in two cases, calcified proliferation of the lumbosacral intervertebral disk in two cases, osteitis deformans of the ilium in one case and old trauma of the fourth and fifth lumbar vertebrae in one case.

In one of the four cases in which local changes were found in the second and third lumbar vertebrae there was infectious destruction of the disk between the second and third lumbar vertebrae, and the density of these vertebrae was increased. In the second case there was evidence of an old fracture of the upper anterior margin of the third lumbar vertebra. In the third case there was evidence of an injury of the first three lumbar vertebrae and marked compression of the second lumbar vertebra. There was also the appearance of superimposed Charcot joint of the spine. In the fourth case there was a congenital deformity of the right lateral articular facet of the third lumbar vertebra. The meralgia also was on the right side.

Spina bifida occulta was found in 8 per cent of our cases, but this percentage is negligible.¹⁴ The spina bifida was not situated above the fifth lumbar vertebra in any of these cases. Roentgenologic examination will not disclose the cause of meralgia unless the disease is associated with trauma or infection that is localized in the second and third lumbar vertebrae.

Intra-Abdominal and Intrapelvic Conditions Which May Affect the Lateral Femoral Cutaneous Nerve.—It will be recalled that the lateral femoral cutaneous nerve runs retroperitoneally across the iliacus muscle after emerging from the lateral aspect of the psoas major muscle. The nerve passes near the cecum and the appendix and is liable to involvement by lesions arising from these sources.¹⁵ In one of our cases rapid abdominal enlargement, which was partly the result of diffuse hepatic cirrhosis and partly the result of ascites of hepatic cirrhosis, was associated with the onset of meralgia.

Pregnancy is occasionally associated with meralgia but probably exerts its effects by tension on the abdominal fascia rather than by direct pressure on the nerve. In three of our cases the onset of the meralgia was associated with pregnancy. In one of these cases the meralgia had appeared in association with a lumbosacral palsy which had occurred when the patient had given birth to a child. Continual burning and tingling in the anterolateral aspect of the right thigh had persisted for nineteen years. Division of the nerve below Poupart's ligament produced relief.

Injury of the Nerve as It Passes Through the Fascial Canal in the Upper Part of the Thigh.—In five cases in our series the etiologic agents apparently were peripheral. In the first of these cases the meralgia had occurred after the patient had fallen on the thigh in a bathtub; in the second case a definite "snapping" in the thigh had occurred when the patient had raised a pickax; in the third case the meralgia had been present

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10. Gordon, Alfred: An Isolated Neuritis of a Sensory Filament of a Peripheral Nerve Trunk, *J. A. M. A.* 53: 1735-1736 (Nov. 20) 1909.

11. Escat, Etienne: Un cas de meralgie paraesthetique de Roth, *Rev. neurol.* 3: 577-582 (Oct. 30) 1895.

12. Cited by Wartenberg.⁹

13. Rosenheck, Charles: Meralgia Paraesthetica: Its Relation to Osteo-Arthritis of the Spinal Vertebrae, *J. A. M. A.* 85: 416-417 (Aug. 8) 1925.

14. Sutherland, C. G.: A Roentgenographic Study of Developmental Anomalies of the Spine, *J. Radiol.* 3: 357-364 (Sept.) 1922; Radiography in the Examination of the Urinary Tract, *ibid.* 4: 221-225 (July) 1923.

Woltman, H. W.: Spina Bifida: A Review of 187 Cases, Including Three Associated Cases of Myelodysplasia Without Demonstrable Bony Defect, *Minnesota Med.* 4: 244-259 (April) 1921.

15. Musser, J. H., and Sailer, Joseph: Meralgia Paraesthetica (Roth), with the Report of Ten Cases, *J. Nerv. & Ment. Dis.* 27: 16-40 (Jan.) 1900.

since tetanus antitoxin had been injected into the thigh some years before the patient came to the clinic, and in the fourth case it had followed an injection of quinine into the fascia lata. In still another case the meralgia had occurred suddenly while the patient was carrying a sewing machine downstairs.

Abdominal Compression.—The wearing of trusses, belts and corsets has been implicated as an etiologic agent since the original description by Bernhardt. The first case that he reported occurred in an army officer whose meralgia was aggravated by wearing a belt and then was aggravated further by a sword which dangled from the belt. Abdominal compression apparently was the cause of the meralgia in four of our cases; three of these patients had worn a truss for hernia, and in one case the patient had worn a sacroiliac belt for sciatica.

In ten cases in our series the meralgia occurred after the patient had undergone an operation. In some of these cases it is possible that the meralgia was caused by an abdominal binder. The following operations were performed: nephrectomy in two cases, appendectomy in two cases, exploratory laparotomy for duodenal ulcer in two cases, herniorrhaphy for diaphragmatic hernia in one case, cholecystectomy in one case, hysterectomy in one case and radical mastoidectomy in one case. In two of these cases transitory numbness had been present before operation; these were the only cases in which there was any suggestion that the meralgia had been latent before the operation. In most of the cases in which the meralgia occurred after an operation the discomfort cleared up promptly.

SYMPTOMS

The disease is usually unilateral; one side is affected as frequently as the other. The right side was affected in fifty-four (36 per cent) and the left side was affected in fifty-seven (38 per cent) of the cases. Even when the disease is bilateral, as it was in thirty-three cases (22 per cent), it usually does not begin so. In more than 50 per cent of our cases symptoms had been present for one or more years before the patients came to the clinic. The duration of symptoms was as follows: less than one month in seven cases, from one to nine months in thirty-eight cases, from one to four years in thirty-nine cases, from five to nine years in twenty-two cases, from ten to nineteen years in thirteen cases, from twenty to twenty-nine years in six cases, and from thirty to thirty-five years in three cases. In twenty-two cases the duration of symptoms was not specified. Numbness was the most common and frequently the earliest symptom; it occurred in 115, or 77 per cent, of the cases. The following subjective sensations also were recorded: tingling in 34 per cent, pain in 24 per cent and burning in 23 per cent of the cases. Appreciation of touch, pain and temperature was diminished in 68 per cent of the cases, but appreciation of pressure was not lost in any case.

Bernhardt originally noted that numbness was a constant symptom and that tingling, burning and pain occurred only after prolonged standing. In our series of cases this feature was common enough to be characteristic. In only two or three cases was the pain aggravated when the patient was sitting or lying down.

Before the accurate clinical description of meralgia, its differential diagnosis was more of a problem than it is today. It is apparent that involvement of the lateral femoral cutaneous nerve may be the first sign

of neurosyphilis and other intraspinal and vertebral lesions. In the typical and particularly the more chronic forms of meralgia there should be no difficulty in making the diagnosis.

PROGNOSIS

In most of our cases, no specific treatment for the meralgia was required. However, records of twenty-nine patients who were examined at varying intervals, averaging two years from the time the original diagnosis was made, showed the following facts: Complete or almost complete relief of pain occurred in eighteen cases; slight or moderate relief occurred in two cases, but no relief occurred in nine cases. The previous duration of symptoms in most of the eighteen cases in which complete or almost complete relief was obtained was less than two years. In other words, when the symptoms have lasted less than two years, the chances are two to one that they will disappear spontaneously within another two years.

TREATMENT

An offending belt or truss should be removed or correctly padded so as not to press on the nerve. When the onset of symptoms is related to obesity, reduction of weight should be advised. Numerous other therapeutic maneuvers have been recommended. Bernhardt, for instance, recommended lukewarm baths, massage and electricity.

Occasionally the symptoms demand active treatment. In these instances resection of the nerve or neurolysis is advisable. Presumably the first surgical measure used to relieve the condition was resection of a portion of the lateral femoral cutaneous nerve, in 1885, by Hager.¹⁶ Resection of the nerve is now the standard operation for the condition, and the result usually is completely satisfactory. Stookey modified the original operation to simple severance of the nerve; he allowed the separated ends to remain in place and anticipated that regeneration would bridge the gap and restore sensation. Lee objected to the possibility of the formation of a neuroma at the end of the resected nerve and to the resultant anesthesia. In one case reported by Lee, in which thorough neurolysis was performed, "slight numbness and a little pain over the area involved" occurred on the seventy-third day after operation; it therefore is clear that neurolysis is not always satisfactory.

SUMMARY

Meralgia paraesthetica is a neuritis of the lateral femoral cutaneous nerve which is caused usually by pressure or tension of the overlying fascia, but occasionally it is caused by other factors. Its incidence is about a thirtieth that of sciatica and that of all other forms of neuritis. It most commonly affects obese, middle-aged men and usually begins as a sense of numbness over the anterolateral aspect of one thigh. Later to the numbness are added the sensations of burning, tingling and pain, which are aggravated by standing or walking. Both thighs may be affected. Usually there can be found slight loss of appreciation of light touch, pain and thermal sensation in the affected area. It is important to recognize the condition in order to exclude the presence of a specific causative factor and then to reassure the patient that the discomfort is usually self limited and that, if necessary, it can be relieved by simple severance or resection of the lateral femoral cutaneous nerve.

16. Hager, cited by Lee.¹

VENEREAL LYMPHOGRANULOMA

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The old school of medicine distinguished four separate diseases which are now combined into the picture of venereal lymphogranuloma: 1. The so-called strumous or scrofulous bubo, known especially to the European venereologists and related particularly to tuberculosis or chancroid. 2. The so-called climatic bubo, known to tropical and naval physicians and associated by most of them to the climate of the tropical countries. These physicians did not know the existence of the strumous bubo, and the venereologists in turn were not aware of the climatic bubo. 3. The so-called esthiomene, a kind of chronic ulcer and elephantiasis of the vulva related by most of the earlier venereologists and gynecologists to cancer, tuberculosis or syphilis. 4. The so-called inflammatory rectal stricture related by surgeons to gonorrhea, syphilis or other diseases. Esthiomene and rectal stricture frequently appeared in the same patients, but the gynecologists usually noticed only the esthiomene and the surgeons only the rectal stricture.

Later some pioneers made valuable contributions. Brault¹ was of the opinion that strumous bubo and climatic bubo might be the same disease. Rost,² a naval medical officer, observed that the midshipmen who went ashore in tropical ports under supervision never contracted climatic bubo but that the older marines who went alone did; therefore he suspected this bubo to be not of climatic but of venereal origin. Friedrich Koch,³ an early pupil of Jadassohn, maintained the existence of a relationship between esthiomene and bubo, and Dr. Jersild⁴ of Copenhagen established the connection between rectal stricture, esthiomene and lymphatic glands.

The series of discoveries in the disease has developed in four steps. In 1913 the French scientists Durand, Nicolas and Favre⁵ proved that the so-called strumous bubo is a separate venereal disease and in the next year two German physicians, Müller-Meernach and Justi,⁶ proved the same for the climatic bubo. Durand, Nicolas and Favre introduced the unfortunate name lymphogranulomatosis inguinalis subacuta, but I shall not discuss the question of nomenclature here. I will merely state that venereal lymphogranuloma is not related to granuloma inguinale, another venereal disease consisting of chronic luxuriant ulcers produced by Donovan's bodies.

The second step was my finding of a specific skin reaction, the so-called venereal lymphogranuloma skin test, 1925.⁷ With the help of this test the identity of venereal lymphogranuloma and of climatic bubo were proved and abortive and inapparent forms of the disease were brought to light. Besides, together with Alice

Koppel, I found the relationship of esthiomene and rectal stricture with venereal lymphogranuloma.⁸

The third step was the transmission of the disease to animals, especially through intracerebral inoculations of monkeys, by the Swedish scientists Hellerström and Wassén in 1930.⁹ With this method they proved that the organism of the disease belongs to the group of filtrable viruses. Their work has been continued by many investigators, above all by Levaditi, who has introduced the mouse as the most suitable animal for the purpose and who was the first to demonstrate virucidal antibodies in the blood serum of infected men and animals.¹⁰

At the present time the fourth step in the investigation of the disease is in progress. It is the cultivation and microscopic examination of the virus along lines used in other virus diseases.

In America as early as 1890 an excellent clinical study of more than 100 cases of strumous bubo had been made by Klotz¹¹ of New York. In 1932 Sulzberger, Wise and Wolf,¹² as well as DeWolf and Van Cleve,¹³ introduced the venereal lymphogranuloma cutaneous test in this country, and then intensive studies began over the entire United States, starting with the works of Cole,¹⁴ Wien and Perlstein,¹⁵ and Lehmann and Pipkin.¹⁶ I am not able to enumerate all the noteworthy publications; I will merely mention the more recent experimental studies of Grace and Suskind,¹⁷ of D'Aunoy, von Haam and Lichtenstein,¹⁸ of Howard and Strauss,¹⁹ of Joseph Tamura,²⁰ of Williams and Gutman²¹ and of Rosen, Rosenfeld and Krasnow.²²

EPIDEMIOLOGY

Venereal lymphogranuloma is found in all countries and in all races, although it is more rare than syphilis and gonorrhea. As in other venereal diseases, its frequency depends on the degree of sexual promiscuity of the population; therefore a high percentage is found in metropolitan cities or seaports such as New York, Paris and Berlin, but strangely enough not in London. There is also a high frequency of the disease among prostitutes and among different colored races, for example Negroes and Malaysians, but not so much among Arabs (circumcision?). Venereal lymphogranuloma does not always follow the general curve of other venereal diseases; it has its own features, as, for instance, peculiar endemic centers and times.

8. Frei, Wilhelm and Koppel, Alice: *Klin. Wchnschr.* 7: 2331 (Dec. 2) 1928.

9. Hellerström, Sven, and Wassén, E.: *Tr. 8th Internat. Cong. Dermat. u. Syph.*, Copenhagen, Aug. 5-9, 1930.

10. Levaditi, C.; Ravaut, P., and Schoen, R.: *Compte. rend. Soc. d. biol.* 109: 1176 (April 22) and 1267 (April 29) 1932.

11. Klotz, H. G.: *Berl. klin. Wchnschr.* 27: 132, 153, 175, 1890.

12. Wolf, Jacob, and Sulzberger, M. B.: *Brit. J. Dermat.* 44: 192 (April) 1932. Sulzberger, M. B., and Wise, Fred: *Lymphopathia Venereum*, J. A. M. A. 99: 1407 (Oct. 22) 1932.

13. DeWolf, H. F., and Van Cleve, J. V.: *Lymphogranuloma Inguinale*, J. A. M. A. 99: 1065 (Sept. 24) 1932.

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16. Lehmann, C. F., and Pipkin, J. L.: *Texas State J. Med.* 29: 192 (July) 1933.

17. Grace, A. W., and Suskind, Florence H.: *The Use of Standardized Mouse Brain Antigen*, J. A. M. A. 107: 1359 (Oct. 24) 1936.

18. D'Aunoy, R.; von Haam, E., and Lichtenstein, L.: *Am. J. Path.* 11: 737 (Sept.) 1935.

19. Strauss, M. J., and Howard, M. E.: *The Frei Test for Lymphogranuloma Inguinale*, J. A. M. A. 106: 517 (Feb. 15) 1936.

20. Tamura, J. T.: *Cultivation of the Virus of Lymphogranuloma Inguinale and Its Use in Therapeutic Inoculation*, J. A. M. A. 103: 408 (Aug. 11) 1934.

21. Williams, R. D., and Gutman, A. B.: *Proc. Soc. Exper. Biol. & Med.* 34: 91 (Feb.) 1936.

22. Rosen, Isadore; Rosenfeld, Herbert, and Krasnow, Frances: *Arch. Dermat. & Syph.* 36: 318 (Aug.) 1937.

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The author, for various reasons, prefers the old established name "lymphogranuloma inguinale." In order to conform with the accepted nomenclature uniformly used in THE JOURNAL, the term "venereal lymphogranuloma" has been substituted by the editor.

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2. Rost, G.: *Arch. f. Schiff- u. Tropen-Hyg.* 16: 677, 1912.

3. Koch, Friedrich: *Arch. f. Dermat. u. Syph.* 34: 205, 1896.

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7: 74 (Feb.) 1926; 11: 577 (June) 1930.

5. Durand, M.; Nicolas, J., and Favre, M.: *Bull. et mém. Soc. méd.*

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6. Müller-Meernach, O., and Justi, K.: *Arch. f. Schiff- u. Tropen-Hyg.* 18: 857 (Beih. 8) 1914.

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A question of special importance is the distribution of venereal lymphogranuloma in the sexes. The bubo form of the disease occurs much more often in males, the elephantiasic and ulcerative form more often on the genitalia and rectum of females. It has seriously been discussed whether these elephantiasic and ulcerated forms represent an infectious stage of the disease. Most authors believe it does, but I am still not totally convinced. This question is of great epidemiologic importance, because quite a few prostitutes are affected with these incurable manifestations without discontinuing sexual intercourse for many years.

Of greatest importance in the spread of venereal lymphogranuloma is the so-called primary lesion on the genitalia, the beginning of the disease. Later on when the bubo has fully developed there is ordinarily less danger of transmission by men. Abortive and inapparent forms, which are known to exist, especially in women, offer a dangerous source of infection even for years. There are several little endemics known to have been started by one single woman who had only slightly enlarged inguinal glands and a mild discharge and gave a positive cutaneous test.

Perverted sexual intercourse also plays a role in the disease. Most rectal strictures in men are produced by homosexual infection of the rectum. Venereal lymphogranuloma of the submaxillary and related glands can occur by infection through the mouth.

Accidental infections have also been observed in some cases; for example, in children who have slept in the same bed with infected adults, and in surgeons who have contracted the disease in the axillary glands after the excision of buboes.

CLINICAL PICTURE

Venereal lymphogranuloma begins with an average incubation of from ten to twenty-five days but occasionally after a period of some months. In a large number of cases the first sign is a small lesion at the portal of entry, generally the genitalia, the so-called lymphogranulomatous chancre, usually not noticed by the patient. The examining physician often finds these lesions or their residua when the patient consults him on account of the bubo. The bubo shows in a large number of cases an appearance similar to that of tuberculosis, with multiple foci of suppuration and fistulation. But in other cases the picture is more like an acute chancroid bubo or like a harmless looking insignificant swelling of the inguinal glands. The iliac glands often participate in the disease. In females the bubo process can develop unnoticed inside the pelvic girdle. During the extirpation of buboes in venereal lymphogranuloma, one sees that the central lymphatic vessels take part in the disease. Sometimes the peripheral subcutaneous lymphatic vessels of the genitalia also show swelling and suppuration of nodular form.

Venereal lymphogranuloma is often but not always connected with general disturbances such as fever, weakness, headaches, rheumatoid symptoms sometimes with joint swelling, rashes and conjunctivitis. Changes have been described even in the fundus of the eye and in the spinal fluid. One finds an increased sedimentation rate and a leukocytosis of moderate degree, and sometimes a transitory positive Wassermann reaction, which is important to know.

In most cases this disease extends over several months, sometimes only over a few weeks and rarely over years. A fatal termination is very rare.

The form of the disease localized in the lymphatic glands must be distinguished from the ulcerative elephantiasic form localized on the genitalia, rectum or both. The earliest sign of this form consists of small uncharacteristic ulcers on the vulva, anus or rectum or of a mild inflammation, particularly in the rectum. These ulcers may persist and enlarge, disappear and reappear. In neglected cases they can destroy the whole genitoperineo-anal area and lead to the formation of a cloaca. The ulcers occur with or without elephantiasic changes characteristic of this form of the disease.

On the female genitalia the elephantiasis consists of a swelling of moderate degree on the labia majora, sometimes labia minora, urethra or other parts. On the male genitalia one sees elephantiasis more often than ulcers. In the rectum the elephantiasis shows a characteristic rigid, often verrucose, thickening of the walls extending usually up to from 5 to 8 cm. from the anus and ending in a more or less narrow stricture of cylindric or annular form. These strictures often cause great difficulty in defecation; the feces may become pencil-like, but a complete occlusion is very rare. Involvement of the mucous membrane produces a bloody purulent viscous discharge. Involvement of the pararectal tissue causes pararectal abscesses and fistulas which break through mostly around the anus and buttocks. The anal folds often form elephantiasic round hemorrhoid-like or lobated cockscomb-like small tumors.

In some cases presenting ulcerative elephantiasis the disease does not reach its full height and spread. For example, occasionally the only sign of the disease for a long time may be a swelling and ulceration of the female urethra, a swelling of the anal folds, a chronic anal fistula, chronic abscesses on the buttocks or circumscribed elephantiasis in the rectum. On the other hand, one also finds cases presenting an extraordinarily large extension. For instance, in the intestinal tract, strictures or ulcers may extend uninterruptedly or at intervals to the transverse colon, occasionally giving the picture of ulcerative colitis.

The prognosis of the ulcerative elephantiasic form is doubtful. Many patients live for years in a tolerable state of health. Others may die earlier from secondary infections and their complications. The rectal form in general seems to be more dangerous than the genital form. Only in the first stage with early ulcers may healing occur.

Between the two forms of the disease, the bubo and the ulcerative elephantiasis, a close relationship exists. In the earliest ulcerative stage inflammatory residua of a previous inguinal bubo are often found; in the later stage characteristic bubonic scars are seen. In other cases, for example in the majority of isolated rectal strictures, every sign of a previous external bubo is missing. Like Jersild, I have believed that in these cases lymphatic changes have previously occurred in the internal glands and vessels alone, while in the other cases external as well as internal glands have been involved. Today many experts believe that the ulcerative elephantiasic changes arise by direct ascending infection of the genitalia, and especially of the rectum, without previous glandular involvement. At any rate the development of the same elephantiasic swelling in cases with and without inguinal changes demonstrates the close connection of this entire form of the disease with the lymphatic system.

DIAGNOSIS

A fully developed lymphogranulomatous bubo in the inguinal region with all characteristic signs, especially when coupled with a suggestive history, does not give rise to any doubts; but, if the bubo is in its earliest stage or has an uncharacteristic form, one must consider other diseases too; for instance, simple glandular swelling, syphilis, chancroid bubo, tuberculosis, Hodgkin's disease, lymphatic leukemia, malignant tumors or tularemia. Likewise a fully developed elephantiasis form of the female genitalia, anus and rectum with all the characteristic signs permits, according to my opinion, definite diagnosis of venereal lymphogranuloma. But if the genitalia alone or the anus alone is involved, or the disease is in a beginning or abortive or unusual form, the clinical diagnosis is not certain. Filariasis, granuloma inguinale, chancroid, syphilis, cancer, tuberculosis, actinomycosis, dysentery, ulcerative colitis and many other diseases must sometimes be eliminated.

In the diagnosis of venereal lymphogranuloma one must also consider the possibility of mixed infections, especially with other venereal diseases.

In all doubtful cases one resorts to special diagnostic methods. For diagnosis of venereal lymphogranuloma the most frequently used method is the cutaneous test. I will not speak in detail about my experiments in this test but merely mention some practical points. The material needed consists of the diluted and sterilized pus of proved, nonruptured pure buboes of venereal lymphogranuloma. One-tenth cubic centimeter is injected intracutaneously and the reaction is read after two days. In a positive case one finds an inflammatory papule of at least 0.5 cm. in diameter, often with peripheral erythema and sometimes with central pustule. In negative cases there is no or very little reaction after two days. Only tested vaccines corresponding to these conditions should be available for general use. On account of the possibility of generalized or focal reactions, it is not advisable to make the test in peracute stages of the disease or in cases in which suppuration occurs near the peritoneum.

A positive reaction does not prove that the disease still exists, because the power to react to the test remains in healed cases for decades. A negative reaction in cases of venereal lymphogranuloma occurs in the earliest stage of the bubo and in some cases in which there is transitory or constant anergy. In cases of anergy a positive result may be obtained by the so-called inverted test, in which, the patient's sterilized pus is injected into the skin of a patient with proved venereal lymphogranuloma, producing a positive reaction, or the usual vaccine is injected intravenously instead of intracutaneously into the suspect and if he has the disease he may respond by a generalized febrile reaction. It may be said that the venereal lymphogranuloma cutaneous test results in about 95 per cent of positive reactions when buboes have developed and in about 90 per cent when there is ulcerative elephantiasis.

Since the vaccine is of human origin, it is often not available in sufficient quantities, because in many of the cases there is little and sometimes no pus. Therefore some investigators have introduced vaccines of animal origin. Levaditi of the Institut Pasteur in Paris and Jonesco-Mihaiesi of Bucharest produce a vaccine from monkey brain. Grace and Suskind of New York and D'Aunoy and von Haam of New Orleans recommend vaccines made from mouse brain. Since I have had no

personal experience with vaccines of animal origin, all my present remarks deal only with the use of the original human vaccine.

In doubtful cases some results may be obtained through histologic examination. In the bubo form one finds inflammatory and suppurative changes in the glands as well as in the periglandular tissue. There is a polymorphogranulomatous tissue, tiny foci of epithelioid cells with giant cells and micro-abscesses or larger ones surrounded by epithelioid cells. The picture is similar to but not totally like that of tuberculosis. In the elephantiasis forms is found the typical picture of elephantiasis, partly connected with the changes just described.

Occasionally one can also try to confirm the diagnosis by animal experiments demonstrating the presence either of virus in the lesions or of virucidal antibodies in the blood serum.

THERAPY

There has been until now no really effective chemotherapeutic method for the treatment of venereal lymphogranuloma. I myself use antimony or gold compounds; others use also copper, iodine, or salicylic acid preparations. Only in the earliest stages or in very mild forms of bubo can one obtain abortive healing with these treatments. But one has to keep in mind the fact that some of these bubo forms have a tendency to heal without any treatment. If the bubo has grown larger, an acceleration of healing is sometimes obtained by these medications. But in severe forms of bubo as well as in elephantiasis, no definite effect is obtained by chemical treatments. The antisyphilitic remedies such as arsphenamine and compounds of bismuth or mercury usually do not give any relief in venereal lymphogranuloma. Only in a few of the cases connected with syphilis does one see improvement.

The therapeutic use of venereal lymphogranuloma vaccine had according to my experience but little effect as long as the vaccine was injected intracutaneously or subcutaneously. Since the introduction of the intravenous method by Hellerström, accelerated healing has been seen in the cases in which there are buboes and sometimes a decrease of complaints in the ulcerative forms. I have had no experience with the intravenous method, but I have seen very good results in New York, especially in the board of health department in the service of Dr. Chargin and Dr. Kornblith.

Some authors recommend the surgical method as the best treatment for the different forms of venereal lymphogranuloma. They extirpate the affected lymph glands in the early and even in the later stages; they extirpate excessive forms of elephantiasis labia majora while treating the chronic ulcerations with intensive coagulation diathermy. On the surgical treatment of rectal stricture there are two different opinions. Most physicians restrict themselves to inducing a preternatural anus as high as possible; only few prefer radical operations. In some rectal cases fairly good results can be obtained with careful, conservative treatment by very cautious dilations and mild irrigations and regulation of diet and bowel movements.

Roentgen treatment gives, perhaps, some results in bubonic cases, especially when combined with other treatment. In cases in the chronic ulcerative stages there is very little effect and in elephantiasis none. Experience with radium treatment is too limited for any conclusions to be drawn. Ultraviolet rays applied generally and locally may be tried occasionally in ulcerative elephantiasis cases.

PROPHYLAXIS

In the prophylaxis of the disease one has to distinguish between the prophylactics belonging to all venereal diseases, with which I shall not deal here, and the special prophylaxis for venereal lymphogranuloma. Primarily it is important to instruct the physicians as well as the public about the disease, its nature, its clinical features, its diagnosis and its treatment. Secondly, one has to treat infected persons as early and as thoroughly as possible, even in mild cases, in order to remove their infectiousness in the shortest possible time. Furthermore, one has to make exact inquiries in every case as to the source of the infection. Many of these infections are contracted from prostitutes. Therefore regular examination of prostitutes, especially with the aid of the cutaneous test, should be considered. Naturally, if at the first examination a prostitute gives a positive reaction, it does not prove very much, because the positive reaction can also be due to a healed previous disease. But if these women are examined regularly and suddenly a change from negative to positive is found, the test would speak for a new infection.

This program can be fulfilled entirely only if the practical and theoretical methods for the management of this disease are carried out. The first thing would be to arrange centralized services to cooperate with the different hospitals and clinics and prepare good human vaccine. I believe it would not be difficult to get sufficient quantities of vaccine in this way, at least for diagnostic purposes. Such services have been used in Sweden and Czechoslovakia with success and could be introduced in other places as well. In my few visits to New York hospitals and clinics I have seen several buboes of venereal lymphogranuloma which could furnish a large amount of this material. The service would be of another use, for it is not always easy for the practitioner to make and interpret the test. It would be best if experienced physicians would do it at least in a majority of cases. It would be still more desirable if vaccine of animal origin is to be used.

The International Office of Public Hygiene has not definitely stated whether regulatory measures should be taken in venereal lymphogranuloma as in the other venereal diseases. I believe it is still too early for extensive legal procedures.

A comparison with syphilis, the only venereal disease in which prophylactic measures have had really great success, shows that weapons against venereal lymphogranuloma must be improved on in two directions: In the first place, in syphilis there are two diagnostic methods, the serologic reactions in advanced stages and the darkfield examination for spirochetes in the early and infectious stages. In venereal lymphogranuloma an equivalent convenient method for the examination of the early stages and infectiousness is lacking and has to be worked out with the help of present and future experimental observations. Secondly, in syphilis there are drugs which enable one to destroy the infectiousness in the shortest possible time. In venereal lymphogranuloma such treatment is lacking and has to be searched for by interrelating chemical and animal studies.

There are naturally still many other experimental and practical questions that have to be cleared up in venereal lymphogranuloma. It has been my intention merely to mention those which, from the general point of view, are of special importance in the fight against this venereal disease.

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PHENOLPHTHALEIN STUDIES

THE THERAPY OF OVERDOSAGE

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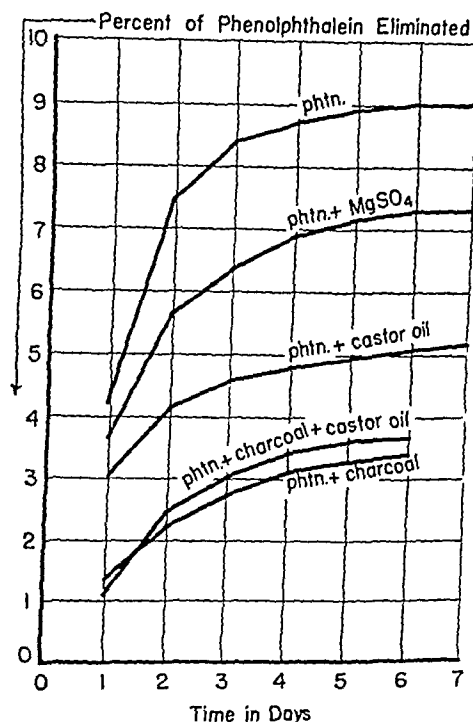
AND

J. M. DYNIEWICZ, Ph.C.

CHICAGO

We have shown in a previous paper¹ that the activated charcoal of the U. S. P. XI has a definite adsorbent action for phenolphthalein, while the non-activated charcoal, such as would have been official according to the specifications of the U. S. P. X, is almost devoid of this effect. We have also shown that activated charcoal given in five times the dose is capable of antagonizing the cathartic action of phenolphthalein in the cat. In the human being we found that a considerably larger excess of charcoal is required but that when such an excess is given the cathartic effect is inhibited.

As there is no well defined plan of treatment available in the literature suitable for the treatment of an



Typical cumulative elimination curves of phenolphthalein in the urine after control dose (phtn.) and control dose followed by agents as indicated.

overdose of phenolphthalein it seemed worth while to test the practical value of charcoal for this purpose by means of an experimental study. Having found it impossible to kill animals—daphnia, worms, mice, cats, dogs, pigs, monkeys—with phenolphthalein administered in any dose, we were forced to study this question on human beings. We therefore administered a fairly large dose of phenolphthalein to volunteers and checked results by noting the degree of cathartic effect as well as the influence on the elimination of phenolphthalein in the urine.

It also seemed plausible that, when an overdose of phenolphthalein is taken, the administration of a rapidly

1. Fantus, Bernard, and Dyniewicz, J. M.: Phenolphthalein Studies: Phenolphthalein and Activated Charcoal, *Am. J. Dig. Dis. & Nutrition* 2: 337-341 (April) 1936.

acting cathartic such as castor oil or magnesium sulfate should sweep out this relatively insoluble and slowly acting cathartic by its greater rapidity of action and thus prevent the excessive purgative effect from an overdose of phenolphthalein.

We therefore projected the following test in which ten volunteers collaborated, each of whom took the following doses at intervals of a week:

Dose 1: 0.30 Gm. of phenolphthalein.

Dose 2: Dose 1 followed in fifteen minutes by 15 Gm. of magnesium sulfate.

Dose 3: Dose 1 followed in fifteen minutes by 15 cc. of castor oil.

Dose 4: Dose 1 followed in fifteen minutes by 7.5 Gm. of activated charcoal. In cases 1, 2 and 3, 15 Gm. of charcoal was given.

Dose 5: Dose 1 followed in fifteen minutes by 7.5 Gm. (15 Gm. in cases 1, 2 and 3) of activated charcoal and followed fifteen minutes later by 15 cc. of castor oil.

Dose 6: Same as dose 1.

The urine was carefully collected throughout the period of time required for the disappearance of the elimination of phenolphthalein in the urine, and the efficiency of the evacuant or adsorbent was estimated by the degree to which the urinary elimination of phenolphthalein was diminished. This, we believe, is a fairly reliable index to absorption as shown by our studies on the urinary elimination of phenolphthalein.²

RESULTS AS TO URINARY ELIMINATION

Table 1 shows that, while there is considerable variation in total percentage of phenolphthalein eliminated in the urine in relation to that ingested (average 3.3 per cent), there is a consistent and marked diminution in the elimination following the administration of activated charcoal, the elimination figure averaging 1.4 per cent, i.e., less than half of the percentage eliminated in the controls. The same average (1.4 per cent) was secured by treatment with charcoal followed by castor oil. Then comes the castor oil figure, which averages 1.75 per cent, and magnesium sulfate winds up with an average elimination percentage of 2.54.

TABLE 1.—Percentage of Phenolphthalein Eliminated in Urine After Evacuants and Charcoal

Case	Phenolphthalein	+ Magnesium Sulfate	+ Castor Oil	+ Charcoal	+ Castor Oil and Charcoal
1	9.03	5.98	4.22	2.39	3.65
2	3.17	3.59	2.28	1.67	1.90
3	1.78	1.65	0.896	0.848	1.18
4	3.31	3.25	1.95	2.35	1.67
5	2.47	2.59	1.97	1.28	1.76
6	2.02	0.96	0.71	1.29	0.36
7	2.92	1.29	0.726	0.896	0.95
8	1.81	1.85	0.69	0.846	0.82
9	2.99	1.76	1.44	0.70	0.68
10	4.10	2.30	2.64	1.71	1.04
Average	3.28	2.54	1.75	1.598	1.404

The results of our experiment with this sequence of doses can perhaps best be visualized by means of the accompanying chart, which represents a typical instance (case 1) of the cumulative elimination percentage of phenolphthalein in the urine in relation to the amount ingested. Even though the curves representing the urinary elimination of phenolphthalein in the various other cases differ in appearance, they—on the whole—tell the same story. It will be seen that the control elimination curve, after the taking of 0.3 Gm. of phenol-

phthalein, reaches the highest point while the elimination curve when charcoal followed is at the lowest level, and this relation is found in all the three cases in which 15 Gm. of charcoal was taken and likewise in some of the cases in which only 7.5 Gm. was taken. The reason for cutting the dose of charcoal in half in the other cases was the difficulty experienced by some of the volunteers in swallowing the entire dose when taken

TABLE 2.—Cathartic Effect of 0.3 Gm. of Phenolphthalein Compared with Succeeding Administration of Magnesium Sulfate, Castor Oil, Charcoal, and Charcoal and Castor Oil

Case	Phenolphthalein	+ Magnesium Sulfate	+ Castor Oil	+ Charcoal	+ Castor Oil and Charcoal
1	+	+++	++	S	+
2	+	+++	++	0	+
3	+	+++	+++	00	++++
4	0	++	+++	00	++
5	++	+++	++++	S	+
6	+	++	+++	S	+
7	++	+++	+++	+	++
8	+	+++	++++	0	++
9	+	+++	+++	0	+
10	+	+++	++++	0	+++

The degree of cathartic effect is indicated by signs: + for definite purgative effect; ++, as well as +++, for more and more severe purgation; S for slight laxative effect; 0 for no effect, and 00 for resulting constipation.

dry (!) or in water. It is very clear from all our observations that the administration of charcoal in about fifty and even in twenty-five times the dose of phenolphthalein greatly lessens the elimination and presumably the absorption of phenolphthalein.

Of the cathartics, castor oil cuts down the height of the elimination curve more than magnesium sulfate, which suggests that castor oil is the better evacuant to be used in case of phenolphthalein overdose if it should be considered of importance to hurry the phenolphthalein through the bowel. That magnesium sulfate is worthless for the purpose is shown in the few instances (cases 2 and 5) in which it actually increased the urinary elimination, as compared with the control, while in some others (cases 4 and 8) this elimination was practically the same in the control and after the use of magnesium sulfate.

The combination of castor oil administered fifteen minutes after the dose of charcoal does not show up to advantage so far as the elimination is concerned when an adequate excess (fifty times) of charcoal is given. In some of the other cases in which only twenty-five times the amount of charcoal was used, the combination with castor oil reduced the elimination below the level produced by either of them alone.

INFLUENCE ON THE CATHARTIC ACTION

There can be no doubt, as shown by table 2, that activated charcoal, given in liberal quantity (at least twenty-five to fifty times), greatly cuts down the purgative effect. While castor oil shows itself the better evacuant for the purpose of sweeping phenolphthalein out of the bowel than magnesium sulfate, the purgation experienced by the persons using either of these evacuants was more distressing than when the phenolphthalein was given alone. This observation, of course, applies merely to the medicinal doses that were used in this experiment; it is entirely possible that, when a large overdose is taken, the use of castor oil might at least cut short the diarrheal period.

Magnesium sulfate, although it should theoretically be better, since it is the more rapidly acting evacuant,

2. Fantus, Bernard, and Dyniewicz, J. M.: Phenolphthalein Studies: Urinary Elimination of Phenolphthalein, to be published.

is less efficient as far as diminishing the elimination of phenolphthalein is concerned, and it is not less disagreeable in its purgative action than the castor oil.

CONTRAINDICATED TREATMENT

It is probable that bowel movement restraining therapy employed by some physicians in such cases is ill advised; for we have found that the less the purgative effect resulting from phenolphthalein (charcoal not having been administered), the greater the degree of absorption. It is probable that restraining the evacuation of phenolphthalein might cause it to exert the maximum possible local effect on the intestinal mucosa. Physicians also have employed the stomach tube in cases of overdosage. Pneumonia ensued in one instance (reported by hearsay). While there may be a justification in the passing of the stomach tube when the physician is called in on such a case shortly after the taking of the dose and especially in case of an allergic person, it can certainly do no good when it is used hours later after the phenolphthalein has left the stomach. The same thing may be said of ipecac, which, being an irritant, may possibly even be harmful.

RECOMMENDATION

We therefore recommend that, in case an overdose of phenolphthalein is taken, there be administered at the earliest possible moment at least twenty-five times—or as large a quantity as one can get the patient to take—of activated charcoal diffused through water. It may be more pleasantly administered in a carbonated drink, such as ginger ale or "coca-cola." It may be given in divided doses. An excess of charcoal is harmless.

If the patient has taken a very large quantity of phenolphthalein, it might possibly be advisable to follow this by a tablespoonful of castor oil.

Passing the stomach tube and washing the stomach should not be undertaken in the treatment of phenolphthalein overdosage unless some phenolphthalein is presumably still in the stomach or the patient is allergic. In case the stomach tube is passed, the dose of activated charcoal should be introduced before the tube is removed. One would indeed be justified in passing the stomach tube to administer the charcoal in case the patient refused to swallow it.

CONCLUSIONS

1. Activated charcoal is recommended as an adsorbent to be used after an overdose of phenolphthalein.

2. Castor oil is a better evacuant to sweep an overdose of phenolphthalein out of the bowel than is magnesium sulfate.

3. The combination of activated charcoal followed by castor oil lessens absorption when an insufficient dose of activated charcoal has been given. However, the cathartic effect of castor oil makes the combined castor oil and charcoal treatment more unpleasant than is the administration of an adequate dose of charcoal without the castor oil.

The Earliest Known Oculist.—Nearly five thousand years ago, during the IIIrd Dynasty, there lived in Egypt a physician named Imhotep, whose reputation was such that he became an administrator of the realm, and finally was deified. However, it was not until the advent of the VIth Dynasty that the earliest known oculist of human history became known. His name was Pepi-Ankh or Iri, and his funeral stele was found near the Pyramids of Giza.—MacCallan, A. F.: *National Policy to be Adopted in a Tropical Country for the Prevention of Blindness*, *Brit. J. Ophthalm.* 22:65 (Feb.) 1938.

THE NATURE OF THE BLEEDING IN JAUNDICE

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The cause of hemorrhage in the patient with jaundice remains a clinical enigma. Although the incident of serious bleeding is relatively low, the gravity of the problem lies in the fact that its occurrence cannot be predicted with any degree of certainty either clinically or by means of the common laboratory methods now available. In recent years the subject has been discussed repeatedly, and thorough historical summaries have been presented by Judd, Snell and Hoerner,¹ Carr and Foote,² Moss³ and others. No attempts will therefore be made to give another comprehensive review of this problem. My purpose in this paper is to present experimental observations made in studying the coagulation of blood which furnish significant information on the nature of cholemic bleeding and to offer practical suggestions for the management of the jaundiced patient.

For the proper understanding and evaluation of these new observations, a short and simple review of the essential mechanism of blood coagulation will be helpful. It is fairly generally agreed that four agents are required for the clotting of blood: (1) prothrombin, (2) thromboplastin, (3) calcium and (4) fibrinogen. The first three interact to form an active enzyme (thrombin), which reacts with fibrinogen, changing it to an insoluble gel (fibrin), which constitutes the clot. The process can be expressed as occurring in two steps:

1. Prothrombin + thromboplastin + calcium = thrombin
2. Fibrinogen + thrombin = fibrin

From these equations one can conclude that a deficiency of any one of the three factors required for the formation of thrombin or the absence or marked depletion of fibrinogen will cause a retardation or even a complete inhibition of clotting. Satisfactory quantitative methods for calcium and fibrinogen have long been available, and naturally these two substances have been repeatedly investigated in jaundice. In none of these studies has a significant alteration of either calcium or fibrinogen been established.

In reference to calcium, Ivy and his associates⁴ have stated that "the general weight of experimental evidence seems to uphold the view that, although a functional deficiency of calcium exists, it has no relation to the bleeding tendency." One may even question whether a functional deficiency exists, for many investigators, including Ravdin, Riegel and Morrison,⁵ Snell, Greene and Rowntree,⁶ Halverson, Mohler and Bergeim,⁷

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1. Judd, E. S.; Snell, A. M.; Hoerner, M. T.: *Transfusion for Jaundiced Patients*, J. A. M. A. 105: 1653 (Nov. 23) 1935.

2. Carr, J. L., and Foote, F. S.: *Progressive Obstructive Jaundice*, *Arch. Surg.* 29: 277 (Aug.) 1934.

3. Moss, Walter: *Experimental Obstructive Jaundice: Its Effect on Fibrinogen and Coagulation of the Blood*, *Arch. Surg.* 26: 1 (Jan.) 1933.

4. Ivy, A. C.; Shapiro, P. F., and Melnick, P.: *The Bleeding Tendency in Jaundice*, *Surg., Gynec. & Obst.* 60: 781 (April) 1935.

5. Ravdin, I. S.; Riegel, Cecelia and Morrison, J. L.: *Coagulation of Blood. I. The Comparative Value of Calcium and Glucose as Agents for Decreasing the Clotting Time*, *Ann. Surg.* 91: 801 (June) 1930.

6. Snell, A. M.; Greene, C. H., and Rowntree, L. G.: *Diseases of the Liver: VII. Further Studies in Experimental Obstructive Jaundice*, *Arch. Int. Med.* 40: 471 (Oct.) 1927.

7. Halverson, J. O.; Mohler, H. K., and Bergeim, Olaf: *Calcium in the Blood in Tuberculosis*, J. A. M. A. 68: 1309 (May 5) 1917.

Koechig⁸ and Walters and Bowler⁹ found no appreciable change in serum calcium either in experimental or in surgical jaundice. Gunther and Greenberg¹⁰ could find no clear evidence for the assumption that a deficiency of calcium existed in obstructive jaundice or that the diffusible or nondiffusible calcium was in any manner significantly altered.

Fibrinogen is rarely diminished in jaundice. As a matter of fact, an elevation of blood fibrinogen is a common finding. Linton¹¹ observed high values even in patients who died of hemorrhage. Lewisohn's¹² patients who bled likewise were found to have a normal or elevated plasma fibrinogen. Moss³ made similar observations in his study of experimental jaundice. One must conclude that neither calcium nor fibrinogen is sufficiently decreased to be considered the cause of bleeding.

Until recently no satisfactory methods for determining prothrombin and thromboplastin were available. This lack no doubt accounts for the failure to consider a deficiency of either of these two important factors as the possible cause of hemorrhage in jaundice. I¹³ succeeded in developing a simple procedure for determining prothrombin in blood. A method was devised which is dependent on the observation that the clotting time of oxalated plasma, when mixed with an excess of thromboplastin and an optimum amount of calcium, can be employed as a direct measure of the prothrombin content of the plasma. In other words, by keeping thromboplastin and calcium constant, the rate of coagulation is dependent on the concentration of prothrombin and can therefore serve as a simple and direct means for determining this important clotting factor in blood.

THE QUANTITATIVE DETERMINATION OF PROTHROMBIN

Four and five-tenths cubic centimeters of blood obtained by venipuncture is mixed immediately with 0.5 cc. of sodium oxalate solution and centrifuged.

One-tenth cubic centimeter of plasma is mixed with 0.1 cc. of thromboplastin solution, and 0.1 cc. of calcium chloride is quickly added. The time required for the formation of a clot after the addition of the calcium chloride is accurately recorded. Normal plasma will clot in from twelve to thirteen seconds. With a decrease in prothrombin, the clotting time is delayed. By means of the accompanying chart one can determine the prothrombin content of blood by the clotting time. As an example, if the plasma clots in thirty-one seconds, one can see that the prothrombin is 15 per cent of the normal.

The following solutions are required:

1. Sodium oxalate: Dissolve 1.34 Gm. of anhydrous pure sodium oxalate in 100 cc. of distilled water.
2. Calcium chloride: Dissolve 1.11 Gm. of anhydrous chemically pure calcium chloride in 100 cc. of distilled water.

8. Koechig, I.: The Calcium Content of the Blood in Pathological Conditions, *J. Lab. & Clin. Med.* **9**: 679 (July) 1924.

9. Walters, W., and Bowler, J. P.: Preoperative Preparation of Patients with Obstructive Jaundice, *Surg. Gynec. & Obst.* **39**: 200 (Aug.) 1924.

10. Gunther, Lewis, and Greenberg, D. M.: The Diffusible Calcium and the Proteins of the Blood Serum in Jaundice, *Arch. Int. Med.* **45**: 983 (June) 1930.

11. Linton, R. R.: The Relation of the Blood Fibrin to the Hemorrhagic Diathesis of Obstructive Jaundice, *Ann. Surg.* **96**: 394 (Sept.) 1932.

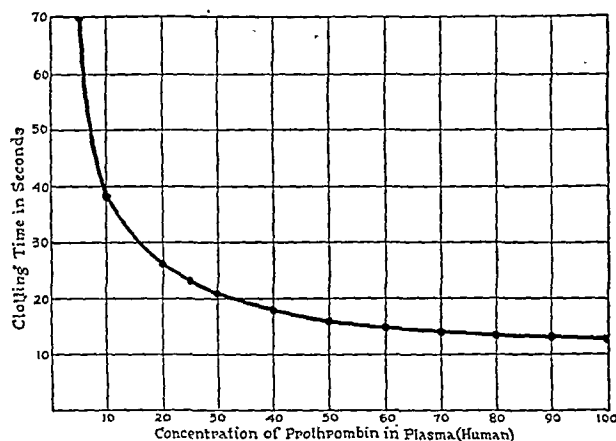
12. Lewisohn, Richard: Haematological Studies as a Basis for Determining the Risk of Postoperative Hemorrhage in Jaundiced Patients, *Ann. Surg.* **94**: 80 (July) 1931.

13. Quick, A. J.: The Prothrombin in Hemophilia and in Obstructive Jaundice, *J. Biol. Chem.* **109**: lxxiii (May) 1935. Quick, A. J., and Leu, M.: Quantitative Determination of Prothrombin, *ibid.* **119**: lxxxi (June) 1937.

3. Thromboplastin solution: Mix 0.3 Gm. of dehydrated rabbit brain with 5 cc. of physiologic solution of sodium chloride containing 0.1 cc. of sodium oxalate. Incubate at 45 C. for ten minutes, then centrifuge at a slow speed for three minutes to obtain a milky supernatant liquid free from coarse particles.

The rabbit brain is dehydrated as follows: after the blood vessels have been carefully removed by stripping off the pia, the brain is macerated in a mortar and extracted with acetone. The solvent is poured off and a fresh amount of acetone added. The process is repeated until a granular powder is obtained. The product is dried at 37 C. and placed in a stoppered container and preserved in a refrigerator. It retains its full activity for a week.^{13a} It is advisable to check the activity of the thromboplastin against a normal plasma.

A study of the prothrombin content of the blood by this method yielded interesting and useful results. The prothrombin concentration of human blood was found to be remarkably constant in normal persons. Curiously, however, the prothrombin content of human blood is only about one fifth that found in the blood of the rabbit, dog and cat, a fact which one probably has to consider when making deductions from animal experi-



Determination of prothrombin in human plasma: The relation of the clotting time of recalcified plasma (containing an excess of thromboplastin) to the concentration of prothrombin.

mentation and applying them to human physiology. Significantly, the prothrombin was found quantitatively the same in hemophilic blood as in healthy subjects. While a normal prothrombin was also found in the majority of jaundiced patients, a certain number showed a definite and, in a few instances, a drastic reduction of this clotting agent.¹⁴

Evidence has now been obtained which clearly shows that a close relationship exists between prothrombin deficiency and the severity of the bleeding tendency in jaundice. With the recognition that prothrombin depletion appears to be the cause of hemorrhage in jaundice and perhaps in other conditions, the desirability of more information concerning this substance becomes evident. Unfortunately the physiologic literature devoted to coagulation furnishes little information concerning prothrombin that can be applied clinically.

The most promising approach to the solution of the prothrombin deficiency in jaundice therefore seemed to be in seeking experimental conditions in which a reduc-

13a. In an evacuated tube, deterioration is extremely slow.

14. Quick, A. J.: Stanley-Brown, Margaret, and Bancroft, F. W.: A Study of the Coagulation Defect in Hemophilia and Jaundice, *Am. J. M. Sc.* **190**: 501 (Oct.) 1935.

tion of this clotting factor could be produced. Three relatively simple but successful ways were found to accomplish this; namely, by avitaminosis (vitamin K deficiency), by a toxin (spoiled sweet clover hay) and by injury of the liver.

After briefly summarizing these experiments, I shall discuss their value in helping to solve the problem of bleeding in jaundice.

VITAMIN K DEFICIENCY

Almquist and Stockstad¹⁵ in this country and Dam and Schönheyder¹⁶ in Denmark discovered that a hemorrhagic disease could be produced in chicks by means of a diet deficient in a new food accessory which Dam has named vitamin K, or koagulation vitamin. Using Almquist's diet, which is complete except for an adequate amount of vitamin K, I¹⁷ was able to detect an appreciable diminution of prothrombin in the chick's blood even as early as the fourth day. When the prothrombin dropped below 20 per cent, a definite hemorrhagic tendency was invariably observed. Small amounts of alfalfa, a food particularly rich in the new vitamin, promptly restored the prothrombin to the normal level and cured the hemorrhagic condition.

SWEET CLOVER DISEASE

In sections of the country in which sweet clover is used as fodder, it is well known that if this hay is spoiled during curing it is apt to cause a serious hemorrhagic disease. Heavy losses due to hemorrhage following simple procedures such as dehorning cattle and castrating bull calves have occurred both in this country and in Canada. Roderick¹⁸ is to be credited for much of the pioneer work on this disease. He observed qualitatively a marked reduction of prothrombin, but his work was handicapped by the lack of a quantitative method. Valuable information was obtained in our laboratory¹⁷ by producing the disease in rabbits and then studying its effect on prothrombin. It was observed that the hemorrhagic tendency ran closely parallel to the decrease in prothrombin. Only when the prothrombin fell below 10 per cent did a serious tendency to hemorrhage become evident. It is of clinical interest that a transfusion with citrated blood promptly elevated the prothrombin of the blood and produced a temporary improvement in the hemorrhagic condition. After twenty-four hours, however, the prothrombin had sunk again to the previous low level. The disease is easily treated, since merely stopping the feeding of the spoiled hay and substituting alfalfa meal promptly cures the hemorrhagic condition. This suggests that the toxin of sweet clover hay exerts its depressing action on prothrombin directly rather than by causing severe organic injury to any organ, such as the liver, and thereby impairing its power to synthesize prothrombin.

INJURY TO THE LIVER

The tendency to hemorrhage following severe parenchymal damage of the liver has long been recognized. The cause of this bleeding also appears to be dependent

on a reduction of prothrombin, as the following experiment illustrates: A female dog weighing 7 Kg. was fasted twenty-four hours and then put under a moderately deep chloroform anesthesia for ninety minutes. The prothrombin remained normal for five hours after the anesthesia but in twenty-four hours sank to 30 per cent of normal and in forty-eight hours reached the low level of approximately 5 per cent. A day later the prothrombin increased to 10 per cent and from then on slowly returned to normal. Similar experiments have been reported by Warner, Brinkhous and Smith.¹⁹ It has been found that carbon tetrachloride given orally can also produce a prothrombin deficiency. A study has been undertaken to determine under which conditions the agent is most effective and to find means for restoring the body's ability to synthesize prothrombin after injury to the liver has occurred.

With the information just summarized, one can arrive at a better understanding of the hemorrhagic diathesis observed in jaundice. Irrespective of the cause for the drop of prothrombin, no serious bleeding was observed until the prothrombin of the blood was reduced to markedly low levels; i. e., below 10 per cent of the normal in human and even lower in rabbit's blood. There is obviously a wide margin of safety in the prothrombin factor, and significantly the coagulation time as measured by the usual methods may remain normal until more than 80 per cent of the prothrombin of the blood is lost. From the chart one can see that coagulation time is very little prolonged until the prothrombin drops to 20 per cent and that only below this level does the time of clotting rapidly increase with further reduction of prothrombin.

It is frequently observed that a jaundiced patient before operation shows no tendency to hemorrhage either clinically or by laboratory tests but nevertheless has serious bleeding soon after the operation. Perhaps in many of these cases a decreased prothrombin concentration exists which is not sufficient to bring the patient into the hemorrhagic zone but enough to exhaust the margin of safety. With the trauma of an operation there may be a further decrease in prothrombin sufficient to exceed the margin of safety and thus bring the patient into the hemorrhagic zone. The converse condition fortunately is also true. A patient with a concentration of prothrombin so low that clotting is very defective is strikingly benefited by even a small transfusion. By restoring only a fraction of the prothrombin, the concentration often is sufficiently raised to bring the prothrombin to a level at which normal clotting occurs. In sweet clover disease it was found that a transfusion was of but temporary benefit, for if the feeding of toxic hay was continued the prothrombin rapidly decreased again. Similarly in the bleeding jaundiced patient, transfusions usually are of only temporary effectiveness.

While transfusions are often of inestimable benefit, they ultimately fail unless the destruction of prothrombin is stopped. The first step therefore is finding the cause for the depletion of prothrombin. Clinical data are disappointingly valueless in even furnishing a clue. Icterus itself cannot be the cause of bleeding, for only a small percentage of jaundiced patients bleed or show any hemorrhagic tendency. It is well known that frequently a deeply jaundiced patient shows no abnor-

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16. Dam, Henrik, and Schönheyder, Fritz: A Deficiency Disease in Chicks Resembling Scurvy, *Biochem. J.* **28**: 1355 (No. 4) 1934; The Occurrence and Chemical Nature of Vitamin K, *ibid.* **30**: 897 (May) 1936.

17. Quick, A. J.: The Coagulation Defect in Sweet Clover Disease and in the Hemorrhagic Chick Disease of Dietary Origin, *Am. J. Physiol.* **118**: 260 (Feb.) 1937.

18. Roderick, L. M.: A Problem in the Coagulation of the Blood: Sweet Clover Disease of Cattle, *Am. J. Physiol.* **96**: 413 (Feb.) 1931.

19. Smith, H. P.; Warner, E. D., and Brinkhous, K. M.: Prothrombin Deficiency and the Bleeding Tendency in Liver Injury (Chloroform Intoxication), *J. Exper. Med.* **66**: 891 (Dec.) 1937.

mal hemorrhagic tendency and has no postoperative bleeding. On the other hand, patients with a biliary fistula having no evidence of jaundice may have severe hemorrhage.

Likewise, on analyzing the blood of patients with various types of jaundice for prothrombin, I obtained normal results in all but a comparatively small number of cases. Rather than blaming jaundice as the cause of bleeding, it seems much more logical to recognize the possibility that often the two may be resultants of one and the same agent. Thus carbon tetrachloride will cause both an intrahepatic type of jaundice and a fall of prothrombin. Furthermore, one must not overlook the possibility that in some instances the icterus and the hemorrhagic tendency may be entirely independent of each other. In studying the blood of jaundiced patients, it was found that the prothrombin was normal in all but a few cases, and clinically it is well known that the majority of patients with obstructive jaundice do not bleed. In those, therefore, who do bleed, a new factor must be present. These confusing observations which cannot be correlated with the help of existing clinical data can be explained much more satisfactorily by the experimental work that has been described.

The discovery that a food accessory, i.e., a fat soluble vitamin, is required by the organism for the synthesis of prothrombin is of special importance. Hemorrhage has been observed in patients with biliary fistula, as well as in animals in which the fistula was experimentally produced.²⁰ Hawkins and Brinkhous²¹ found a marked decrease in prothrombin and concluded that this was the cause of the bleeding. In a communication to *THE JOURNAL*, I²² made the suggestion that the depletion of prothrombin may be due to the absence of bile acids in the intestinal tract, thus causing a faulty absorption of vitamin K. Recently Greaves and Schmidt²³ have demonstrated that the prothrombin deficiency produced in rats by a biliary fistula or by ligation of the bile duct can be relieved by feeding massive doses of vitamin K or by including bile with the diet. They conclude that bile probably acts as a carrying agent for the vitamin across the intestinal tract. It is more than probable that a condition can result in the human being similar to the experimental condition present in the rat. A patient with biliary abnormalities often is on a prolonged low fat diet, which obviously limits his intake of the fat soluble vitamins. If now a condition supervenes which prevents the entrance of bile into the duodenum, the absorption of vitamin K may be almost completely stopped and in a short time the patient may reach the stage at which a deficiency of prothrombin frankly manifests itself. The possibility of vitamin K deficiency as a cause of bleeding in jaundice therefore cannot be ignored and should unquestionably receive first consideration in handling hemorrhage in a patient with a biliary fistula.

The ease with which the prothrombin of the blood can be reduced to a hemorrhagic level experimentally by hepatotoxic substances such as chloroform or carbon tetrachloride makes it highly probable that in a certain

number of cases of jaundice the hemorrhagic tendency is secondary to damage to the liver. In view of these considerations, the following cases²⁴ are both significant and instructive:

CASE 1.—A woman, aged 55, complained of nausea, vomiting and epigastric discomfort. In the course of a few days, jaundice developed. August 13, two weeks after the onset of her illness, she was admitted to Columbia Hospital. At this time she was deeply jaundiced (icteric index 218) and her clinical condition became progressively worse. Physical examination was negative except for the jaundice and moderate epigastric tenderness. Laboratory studies revealed the following: The icteric index remained over 200 until August 24. The blood count was normal. The urine contained a large amount of bile pigments; the stools were nearly acholic. The hippuric acid test of liver function was 51 per cent of normal. The clinical condition did not improve and a week after admission a severe pruritus developed. August 25, definite signs of bleeding were noted. Curiously at this time the jaundice began to diminish slightly. The bleeding tendency, however, rapidly became alarming. The patient bled for nearly two hours from a scratch on her thigh, and the oozing from a prick of the ear lobe for a blood count was stopped with difficulty. Blood appeared in both the urine and the stools, and the patient had several hematemeses. Large ecchymotic spots appeared below the left breast, thigh and other parts of the body. At this time intensive blood studies were begun.

August 31: Blood prothrombin was less than 2.5 per cent of normal, fibrinogen 0.66 per cent, coagulation time (Lee White) from seventeen to eighteen minutes. Transfusion (475 cc. of blood) promptly stopped the hemorrhagic tendency, except that blood was still found in the urine.

September 1: Transfusion (400 cc.).

September 2: Prothrombin 15 per cent, fibrinogen 0.65 per cent, coagulation time seven minutes.

September 4: Prothrombin 7.5 per cent, fibrinogen 0.65 per cent, coagulation time ten minutes; transfusion (300 cc.).

September 7: Prothrombin 10 per cent, coagulation time seven minutes.

September 8: Prothrombin 8 per cent, coagulation time ten minutes.

September 9: Before transfusion, prothrombin 8 per cent and coagulation time eleven minutes; immediately after the transfusion (550 cc.), prothrombin 20 per cent, fibrinogen 0.72 per cent and coagulation time five minutes.

September 13: Prothrombin 20 per cent, coagulation time seven minutes.

September 14: Prothrombin 40 per cent, coagulation time six minutes.

September 17: Prothrombin 60 per cent, fibrinogen 0.65 per cent, coagulation time five minutes.

September 23: Prothrombin 100 per cent, coagulation time four minutes.

October 4: Hippuric acid test of the liver, 77 per cent of normal. Jaundice had nearly completely disappeared at this time.

A month later the liver function as measured by the hippuric acid test had returned to 90 per cent of normal.

During the first week in December, jaundice again appeared but after two weeks began to subside. December 20 the blood prothrombin was determined and found normal. December 21 the patient was operated on. The common duct was found greatly dilated, owing to an obstruction from a fanlike adhesion. The liver appeared grossly normal. A prothrombin determination two days after the operation again gave normal results. The patient made an uneventful recovery and at no time did she have any abnormal bleeding.

While the exact cause for the intense hemorrhagic condition cannot be definitely stated, it seems reasonable to attribute the bleeding to hepatic dysfunction, especially since another function, the synthesis of hippuric acid, also was markedly reduced

20. Hawkins, W. B., and Whipple, G. H.: Bile Fistulas and Related Abnormalities: Bleeding, Osteoporosis, Cholecystitis and Duodenal Ulcers, *J. Exper. Med.* **62**: 599 (Oct.) 1935.

21. Hawkins, W. B., and Brinkhous, K. M.: Prothrombin Deficiency the Cause of Bleeding in Bile Fistula Dogs, *J. Exper. Med.* **63**: 795 (June) 1936.

22. Quick, A. J.: Vitamin K, *J. A. M. A.* **109**: 66 (July 3) 1937.

23. Greaves, J. D., and Schmidt, C. L. A.: Nature of the Factor Concerned in Loss of Blood Coagulability of Bile Fistula Rats, *Proc. Soc. Exper. Biol. & Med.* **37**: 43 (Oct.) 1937.

24. Case 1 is presented through the courtesy of Dr. William E. Kiley, and cases 2 and 3 through that of Dr. Stanley J. Seeger.

and began to improve at the time the patient was again producing prothrombin. The case clearly was not one of vitamin K deficiency, since no beneficial effects were noted after either powdered alfalfa leaf or an extract of alfalfa prepared according to Almquist's method was given.

The patient was given large amounts of dextrose as well as of gelatin. Undoubtedly these substances had a beneficial effect on the function of the liver, but the spontaneous relief of the obstruction was without question the major factor in her recovery. The repeated transfusions were of inestimable value, for they tided her over a critical period by supplying prothrombin, which her liver was failing to produce. It was most fortunate that she was not operated on at the time the prothrombin was low and the hepatic efficiency, as determined by the hippuric acid test, greatly reduced. It should be pointed out that the coagulation time as measured by the Lee White method became normal as soon as the prothrombin was raised to 15 per cent of normal. The limitation of the coagulation time in determining the bleeding tendency is obvious.

CASE 2.—A boy, aged 5 years, has had since May 21, 1937, multiple abscesses of the liver that have perforated both into the pleural cavity and into the abdomen. These have been repeatedly drained surgically. An icteric index of 27 suggested a mild toxic hepatitis. A prothrombin determination made Jan. 4, 1938, showed that it was 60 per cent of normal. Such a reduction is not sufficiently severe to bring about abnormal bleeding, and clinically no signs of hemorrhage have been observed. In this case the decrease in prothrombin is due undoubtedly to an injury to the liver.

CASE 3.—A boy, born Nov. 24, 1936, had jaundice, which was present at birth and continued. An exploration laparotomy was done Jan. 18, 1937. It was found that the gallbladder was small and empty, and no bile was present in the cystic and common duct and no hepatic ducts were seen. A prothrombin determination, made March 12 and repeated March 19, gave normal results. In this type of case one could expect the development of vitamin K deficiency, but the prothrombin remained normal and no signs of a bleeding tendency were ever observed.

A prothrombin determination of the blood in more than fifty other jaundiced patients yielded normal results. This is in accord with the clinical observation that the incidence of bleeding in patients with jaundice is relatively low.

MANAGEMENT OF THE JAUNDICED PATIENT

Irrespective of the cause of jaundice, several helpful suggestions can be made in the treatment of jaundiced patients, particularly with regard to the prevention of hemorrhage. It is of primary importance to know whether impairment of hepatic function has occurred. While no laboratory test is perfect, a simple method such as the synthesis of hippuric acid can furnish valuable information.²⁵ If the synthesis is reduced much below 50 per cent of normal, the patient is apt to be a poor surgical risk.²⁶ Unless an operation is extremely urgent, the patient should be given the benefit of special preoperative treatment with the aim of improving the function of the liver. The use of dextrose is well recognized, and I have advocated the administration of gelatin because of its high content of aminoacetic acid.²⁷ Vitamin therapy is still to some extent empiric. Viosterol has been found beneficial by McNealy, Shapiro and Melnick.²⁸

In the prophylaxis against postoperative bleeding, the concentration of prothrombin should be closely followed both before and after the operation. Undoubtedly the prolonged bleeding time by Ivy's method⁴ and the defective clot test of Boyce and McFetridge²⁹ are dependent on the depletion of prothrombin and can be employed with profit. The direct determination of prothrombin, as I have outlined, offers, however, the advantage of being quantitative and a good prognostic guide in combating hemorrhage.

If a prothrombin deficiency is found, efforts should immediately be made to restore the level of this clotting factor to a point that assures normal clotting. Should the patient's history suggest a possible vitamin K deficiency, the administration of this food factor either in the form of powdered alfalfa leaf or as an extract prepared by the method of Almquist³⁰ is indicated. One should also administer bile, bile acids or desoxycholic acid to assist in the absorption not only of vitamin K but of vitamins A and D as well. If injury to the liver is present, dextrose, gelatin or aminoacetic acid, calcium and viosterol are the chief therapeutic agents available.

If the prothrombin concentration of the blood is below 15 per cent the only prompt and effective treatment is transfusion. The prothrombin content of the blood should serve as the guide to the time and frequency of the transfusions. Whenever the prothrombin falls below the critical level, which can be approximately stated as from 15 to 20 per cent of normal, another transfusion is indicated. It must be emphasized that this treatment is of only temporary benefit; nevertheless, as long as the patient's prothrombin is kept above the bleeding level, the danger of serious hemorrhage is abated and this allows time for trying various therapeutic means and agents for restoring the body's power to produce prothrombin.

CONCLUSION

Prothrombin deficiency is an important cause of defective and prolonged coagulation of the blood. A wide margin of safety, however, allows nearly 80 per cent of the prothrombin in human blood to be lost before serious hemorrhage occurs. In various types of jaundice the prothrombin may drop to an exceedingly low level, and it has been found that the bleeding tendency corresponds to the prothrombin depletion. Experimentally it has been demonstrated that the prothrombin can be reduced by deprivation of vitamin K, by a toxin such as occurs in spoiled sweet clover hay and by an injury to the liver. In all types of prothrombin deficiency, blood transfusion is a prompt therapeutic means of stopping bleeding, since sufficient prothrombin is supplied to assure normal coagulation, but its beneficial action is temporary. The permanent cure depends on restoration of normal hepatic function. A vitamin K deficiency as a cause of hemorrhage has not been demonstrated clinically, but it is probable that it may be a cause of bleeding in man.³¹

561 North Fifteenth Street.

29. Boyce, F. F., and McFetridge, E. M.: A Serum Volume Test for the Hemorrhagic Diathesis in Jaundice, *J. Lab. & Clin. Med.* **23**:202 (Nov.) 1937.

30. Almquist, H. J.: Further Studies on the Antihemorrhagic Vitamin, *J. Biol. Chem.* **120**:635 (Sept.) 1937.

31. Since this paper was written, very favorable results in the treatment of hemorrhage in jaundice with vitamin K and bile have been reported by: Warner, E. D.; Brinkhous, K. M., and Smith, H. P.: Bleeding Tendency of Obstructive Jaundice: Prothrombin Deficiency and Dietary Factors, *Proc. Soc. Exper. Biol. & Med.* **27**:628 (Jan.) 1938. Butt, H. R.; Snell, A. M., and Osterberg, A. E.: The Use of Vitamin K in Treatment of the Hemorrhagic Diathesis in Cases of Jaundice, *Proc. Staff. Meet., Mayo Clin.* **12**:74 (Feb. 2) 1938.

25. Quick, A. J.: The Synthesis of Hippuric Acid: A Test of Liver Function, *Am. J. M. Sc.* **185**:630 (May) 1933.

26. Snell, A. M., and Plunkett, J. E.: The Hippuric Acid Test for Hepatic Function: Its Relation to Other Tests in General Use, *Am. J. Digest. Dis. & Nutrition* **2**:716 (Feb.) 1936.

27. Quick, A. J.: Clinical Value of the Test for Hippuric Acid in Cases of Diseases of the Liver, *Arch. Int. Med.* **57**:544 (March) 1936.

28. McNealy, R. W.; Shapiro, P. E., and Melnick, P.: The Effect of Viosterol in Jaundice, *Surg. Gynec. & Obst.* **60**:785 (April) 1935.

Clinical Notes, Suggestions and New Instruments

EMPHYSEMA OF THE CECUM AND ASCENDING COLON

GEORGE STRENGER, M.D., BROOKLYN

Emphysema of the cecum and ascending colon, as the name implies, is an infiltration of the wall of the intestine with gas. It is a rare condition, there being only ninety-five reported cases, while the case to be reported is the only one on the records of our hospital. Other names for this medical rarity are "cystic pneumatosis," pneumatosis cystoides and "gas cysts of bowel." The occurrence of a similar disturbance in the intestine of swine has been known ever since the early eighteenth century, but the first case in the human body was noted by Colquet and Duvernay in 1825.¹

When the cecum is affected the intestine is covered with many minute vesicles, its wall being greatly thickened and crepitant, so that it feels like lung tissue.² However, in the jejunum and ileum the gas cysts are usually larger and may hang from the intestine and mesentery in grapelike clusters.³ These gas spaces or cysts are most numerous under the serosa and mucosa, although they are scattered throughout all the coats of the intestine. Microscopically they are lined with flattened endothelial-like cells and are surrounded by giant cells and lymphocytes. But in one case, described by Nitch and Shattuck,⁴ the wall of the intestine was infiltrated with numerous polymorphonuclear leukocytes. Usually there is some associated condition such as a peptic ulcer, tuberculosis or ulcer of the cecum.

The pathogenesis of this bizarre condition is obscure. Living cells can secrete gas in considerable quantity, as evidenced in the swim bladder of the fish. But vacuolization of the giant cells so frequently found in the affected intestine has never been noted, nor are these cells found in the swim bladder. Actual secretion of gas is therefore improbable. Another possibility is the liberation of gas from the tissue lymphatics, but here again there is no proof to support such a theory. Is it bacterial in origin? Most carefully studied cases showed no bacteria either on microscopic examination or on culture, although a few authors have reported the finding of gas producing bacilli.¹ One of Nitch's cases showed a polymorphonuclear infiltration of the wall of the intestine but no bacteria.

The most plausible theory is the mechanical one,³ postulating that gas is forced into the wall of intestine through an ulceration or fissure in the mucosa. Thus Bubis and Swanbeck¹ found an ulceration at the base of the appendix in their case, discovered after resection of the involved intestine. Of forty-two published cases studied by these authors, thirty-two presented ulcers of the stomach or duodenum. Peristaltic action forced the gas through such mucosal "breaks" into the other layers of the intestine.

Emphysema of the intestine has never been diagnosed preoperatively. Those patients in whom the disease was limited to the cecum and ascending colon had a palpable boggy tumor in the right iliac region, usually diagnosed as intussusception or appendical abscess.

Therapy depends on the conditions found at operation. Certainly if obstruction is present, resection or side-tracking anastomosis should be done. Nitch⁴ performed a resection of the involved intestine in one of his cases, while Twyman² and more recently Hardt⁵ merely incised some of the vesicles and obtained an apparent cure. The case reported here was treated in yet another manner.

REPORT OF CASE

A white man, aged 37, admitted to the surgical ward of the Jewish Hospital Dec. 29, 1935, had for the past week suffered from attacks of periumbilical colicky pain lasting from three to five minutes and recurring every two to three hours. He had not vomited nor had he had bloody or tarry stools. The bowels had been severely constipated for one year but the patient had not lost weight.

He did not appear acutely ill. The temperature was 99 F. and the pulse 80, regular and of good volume. Examination of the heart and lungs revealed no abnormality. Palpation of the abdomen disclosed a soft, moderately tender mass in the right lower quadrant a little below the level of the iliac crest. The urine was normal. The blood contained 11,100 white blood cells per cubic millimeter and a blood smear study gave a differential count of 60 per cent polymorphonuclear leukocytes, 36 per cent lymphocytes, 2 per cent eosinophils and 2 per cent monocytes. The red blood cell count was 4,600,000 with 83 per cent hemoglobin. Blood sedimentation time was 14 mm. in one hour.

A diagnosis of appendical abscess was made and the abdomen was entered through a gridiron incision in the right lower quadrant. The condition was truly startling. The cecum and lower half of the ascending colon were pink, markedly enlarged and completely covered with innumerable small vesicles containing an odorless gas. The involved intestine was crepitant to the touch, giving one the impression of lung tissue. There were many enlarged lymph glands. The appendix was congested but its surface was free of vesicles. The stomach, duodenum and ileum were normal. The following procedure was then carried out: The peritoneum on the outer aspect of the cecum and ascending colon was incised and the affected portion of the intestine was sufficiently mobilized to make exteriorization possible. Great care was taken to avoid injury to the blood supply. A lymph gland was removed for examination. A sling of Penrose rubber tubing was placed under the intestine, which was then drawn out of the wound and the latter closed around the protruding intestine. A petrolatum gauze dressing was applied and the patient was returned to the ward.

Forty-eight hours later the wound was dressed and, much to my surprise, the intestine appeared perfectly normal. Not a trace of the vesicles remained. It was then decided to replace the intestine in the peritoneal cavity, and so the patient was again taken to the operating room. The exteriorized intestine was gently cleaned with green soap and water and the surrounding skin sterilized with iodine and alcohol. The sutures were removed, the wound was opened and the intestine replaced, there being only a few flimsy adhesions to the parietal peritoneum. A Penrose drain was placed down to the region of the cecum. Within two weeks the wound was healed and the patient was up and about. The department of pathology reported evidence of acute and chronic inflammation in the lymph gland removed at operation. A complete gastro-intestinal x-ray study was made, but the only abnormal finding was some irregularity in the cecum suggesting an inflammatory lesion. The patient was discharged twenty-three days after admission symptom free with his wound well healed.

July 3, 1936, the patient was again admitted with a three weeks history of pain in the right lower quadrant and periumbilical pain beginning ten minutes after meals, without nausea, vomiting or abnormal stools. He had gained weight since his previous admission and did not appear ill. The pulse and temperature were normal. Examination of the abdomen showed some tenderness in the region of the umbilicus and right lower quadrant, where a soft mass, probably the cecum, could be felt directly under a well healed scar. A complete and detailed study of the gastro-intestinal tract revealed no abnormality other than the slight irregularity in the haustrations previously reported. He was placed on a bland diet and discharged twenty days after admission, greatly improved.

The patient's third admission occurred November 5. He had been well until twenty-four hours before arrival at the hospital, when he had a sudden attack of severe epigastric pain without nausea or vomiting, followed several hours later by a bloody stool. He did not appear acutely ill. There was a

From the Surgical Service of Jewish Hospital.

1. Bubis, J. L., and Swanbeck, E. E.: Gas Cysts of Intestine, *Ann. Surg.* **75**: 620-624 (May) 1922.

2. Twyman, E. D.: Emphysema of the Cecum, *J. A. M. A.* **73**: 1840 (Dec. 13) 1919.

3. Mills, H. W.: Gas Cysts of the Intestine, with Report of Three Cases, *Gynec. & Obst.* **40**: 387-400 (March) 1925.

4. Nitch, C. A. R., and Shattuck, S. G.: Diffuse Emphysema of the Intestinal Wall, *Proc. Roy. Soc. Med. (Sect. Path.)* **12**: 46-86 (Aug.) 1919.

5. Hardt, L. L.: Emphysema of the Cecum, *J. A. M. A.* **105**: 1982 (Dec. 14) 1935.

soft nontender mass in the right lower quadrant, probably cecum, and a palpable spastic sigmoid. Rectal examination was negative. There were 13,300 white blood cells per cubic millimeter, of which 62 per cent were polymorphonuclears, 30 per cent lymphocytes, 6 per cent monocytes and 2 per cent eosinophils. The feces gave a positive benzidine reaction for blood, and this persisted for eleven days.

A complete gastro-intestinal x-ray study again revealed a persistent constriction in the lower portion of the cecum and irregular projections suggesting diverticula in this region. He was discharged December 8, one month after admission and about one year after his first admission.

Dr. Harry Freund, who has been taking care of the patient, informed me in a recent communication that the mass in the right lower quadrant is no longer palpable and that constipation is no longer present but that mild periumbilical and epigastric discomfort occasionally occurs.

CONCLUSION

In the case of emphysema of the intestine here reported careful clinical, laboratory and x-ray study over a year's period leads one to suspect a mechanical factor in the formation of the gas vesicles found at operation, the gas having been forced through an ulceration in the cecal mucosa. Resection of the involved intestine was not performed. The patient is now practically symptom free.

455 Ocean Avenue.

TRANSMISSION OF INCITANTS OF ENTERIC DISEASE BY UNSTERILE EQUIPMENT USED FOR ADMINISTERING FLUID BY RECTUM

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Few reports of the transmission of incitants of typhoid and other enteric diseases by rectum have appeared in the literature. Hervey¹ in 1929 published an interesting description of an outbreak of typhoid in a hospital in which apparatus for the Harris drip had evidently been the vehicle for the transmission of typhoid bacilli.

Two similar instances have come to the attention of the Division of Laboratories and Research of the New York State Department of Health. A number of years ago in an investigation of three hospital patients with paratyphoid fever, a study was undertaken of the equipment used for the administration of enemas. Catheters, rubber tubing and funnels were selected from among the supply understood to have been cleaned and ready for use. Laboratory examinations demonstrated that the catheters and tubing had not been properly sterilized. Bacteria of the type found as the result of fecal contamination developed on mediums inoculated with material collected from the inside of the tubes. More recently, several cases of bacillary dysentery occurred in a hospital under similar circumstances. An investigation of the rubber catheters used for administering enemas demonstrated the presence of fecal flora in more than half of them. Transmission of *Endamoeba histolytica* in the same manner might also be expected, since in kittens infection with this species readily occurs following inoculation by rectum.

The danger of transmission of incitants of enteric disease and other species of pathogenic bacteria or protozoa by rectum may be greater than when such micro-organisms are swallowed, since the amount of acid normally present in the gastric contents will kill most types of bacteria or protozoa unless spores or encysted forms are present. Hospital personnel should appreciate that washing alone does not afford adequate protection and that all parts of the apparatus employed for the treatment of one patient should be sterilized before it is used on another.

New Scotland Avenue.

From the Division of Laboratories and Research, New York State Department of Health.

1. Hervey, C. R.: A Series of Typhoid Fever Cases Infected per Rectum, *Am. J. Pub. Health* 19: 166-171 (Feb.) 1929.

CHRONIC SUBDURAL HEMATOMA WITH ACUTE PSYCHOTIC MANIFESTATIONS OPERATION AND RECOVERY

D. M. OLKON, M.D., CHICAGO

The interest in this case lies in the acute manifestations of psychotic behavior in a proved chronic subdural hematoma with only minimal neurologic signs.

A white man, aged 37, married, of good health and exemplary habits, actively engaged in business and very alert, was on his vacation when suddenly the following acute symptoms developed: He became confused, completely disoriented as to time, place and person, failed to recognize his wife and immediate family, and became violent. He refused food and water for fear it was poisoned, and expressed many hallucinations and delusions; for example, that people were standing over him with guns to kill him. He was fearful of every one near him and became negativistic, anxious, apprehensive and resistive.

In view of all these manifestations and his refusal of food he was taken to a hospital. While there he walked out in his pajamas and had to be brought back with the aid of the police. On his return to the hospital he became greatly disturbed, screaming that he wanted to die. He still refused food and, as a result, became very weak. The physician in attendance believed his condition to be an acute psychosis and advised his return to Chicago for institutional care.

I saw the patient July 31, 1937, four days after the acute onset. The following history was given by his wife, his older sister, two nephews, one a senior medical student, and a niece. During the past year they had noticed a marked change in his personality. Formerly he had been a person of exemplary habits and of a good disposition. He had now become quarrelsome without particular provocation, avoided his former friends and companions, became secretive and fault finding, and had the idea that his superiors in business "were not giving him a square deal." After work he refused to go out of the house and never seemed to have enough sleep. He complained of frequent headaches and a feeling of tightness in his head. His appetite became poor, he became capricious about his food, and he lost considerable weight. He never vomited. Further inquiry brought out that a year before in June, while driving his car in the daytime, he suddenly felt a sensation in his head as if he had been struck with a hammer. He became confused, dizzy, very tired and weak, and felt great pain in the head. He stopped the car, rested for a time and then drove home. When he came into the house he complained of a "pounding headache" and weakness. A physician was called, who thought the patient suffered from sunstroke, prescribed a tonic for his weakness and "bromo-seltzer" for his headache. His general condition improved, but the headaches continued. For these he took bromo-seltzer three or four times a day without improvement. It was also stated that the previous winter on several occasions he had a tendency to stumble and fall. To these occurrences he paid no particular attention.

When I saw him in his home July 31 he was confused, apprehensive and irrational. He did not know his age or where he was, and he did not recognize his family. He refused examination and did not talk spontaneously. He started to undress in the presence of the women and seemed unconcerned about it. He was very pale and his face had a mask-like expression. His lips were covered with sordes and there was a fetid odor from his mouth. In walking he seemed to stagger to the right. When he was taken to the hospital he resisted so strenuously that it took three men to get him into the car. He kept saying "It is too late; there is no use." Examination in the hospital revealed the following: The skin was cold, clammy and pale. His temperature was 98.4 F., pulse 80, respiratory rate 24. The heart and lungs were normal. The blood pressure was 110 systolic, 70 diastolic. The tonsils appeared swollen and the tongue was dry and coated. The abdomen was sunken, soft and without palpable masses. The prostate was small, smooth and soft to the touch. He was now

Patient presented before the Chicago Neurological Society in November 1937.

in a daze and did not respond to questions or to painful stimuli. He lay in bed completely immobile and soon went into a semi-stupor state. He kept on muttering "death, killing, no use, I am dead, take them away" and the like. During the night he became restless and wanted to get out of bed and jump out of the window. The night nurse had to call in help to restrain him. This behavior occurred three nights in succession.

On neurologic examination the pupils were round and equal, about 4 mm. in diameter, and reacted well to light and in accommodation. The eyegrounds appeared normal. These results were confirmed with the use of homatropine by an ophthalmologist. There was no paresis or paralysis of the extra-ocular or facial muscles or any rigidity of the neck. The deep reflexes of the upper and lower extremities were equal, about 2+. The right knee reflex, however, at times appeared a little livelier. There were no Babinski, Oppenheim, Chaddock or Rossolimo signs, no foot clonus and no paralysis in any muscle group. The grasp reflex was absent. Sensation could not be determined, for he did not react to touch or to thermal or painful stimulation. The abdominal and cremasteric reflexes were not obtained on repeated examinations.

Laboratory examinations of the urine and feces on many examinations gave negative results. The blood count was as follows: red blood cells 5,400,000, hemoglobin 85 per cent (Dare), leukocytes 8,700, polymorphonuclears 51 per cent, lymphocytes 46 per cent, monocytes 3 per cent. Five other examinations showed similar counts, except that the red count went down to 4,500,000. The Widal test was negative. Blood sugar was 109 mg. per hundred cubic centimeters of the fasting blood, and urea nitrogen 23.43 mg. The blood Wassermann and Kahn reactions were negative. Spinal fluid on puncture came out in drops and was clear without any apparent increase in pressure. The laboratory report was as follows: 5 cells per cubic millimeter in undiluted fluid; Pandy reaction negative, Ross-Jones reaction negative, sugar 85.42 mg., total protein 0.48 per cent, Kahn and Wassermann reactions negative, colloidal gold curve 1111000000.

The roentgenologist's report was as follows: "The skull tables show no evidence of increased pressure or erosion, nor is there any evidence of a fracture in any of the views. All of the sinuses are clear; the sella turcica is normal."

At the suggestion of Dr. Eric Oldberg the chest was examined with the fluoroscope and x-ray plates were made. The report stated that the chest was negative for neoplasm or any evidence of metastases; the heart and aorta showed nothing unusual.

The patient's condition did not improve under conservative methods of treatment. It is evident from this study that there were no definite organic abnormalities. Yet from the antecedent history, the acute onset, the former constant headaches and the patient's present condition, I was inclined to think that there was an organic brain involvement and advised ventriculography.

Dr. Oldberg was consulted, and on the seventh day of admission the patient was prepared for ventriculography. The skull was trephined. As Dr. Oldberg looked in on the dura mater he turned to me and said "There is no pressure." However, as he nicked the dura for the insertion of the cannula several ounces of dark blood gushed out. The patient went into shock, but when the head was lowered his pulse and respiratory rate improved and the blood stopped flowing. Dr. Oldberg inserted the cannula for about 3 cm. before he could feel brain tissue, indicating the extent of brain compression. When the patient was returned to bed he complained of a headache but soon relapsed into a stuporous condition. He remained in this state for the following three days. From then on his improvement was steady. His sensorium cleared, he knew all his callers, he had no delusions or hallucinations and he became quite affable. On the twenty-first day after admission he was discharged from the hospital fully recovered. I advised a month's rest, and he went back to his work October 1, a perfectly well man, without any sequelae except the continued absence of the cremasteric reflex. He had gained about 30 pounds (13.6 Kg.) and felt well. He did not remember anything of the entire episode.

SUMMARY

There are a few outstanding points which it might be well to restate:

1. The main symptomatology in this case was that of an acute psychosis without dominant neurologic manifestations.
2. The change of personality antedated the acute onset for about a year.
3. In this instance the subdural hematoma was not due to alcoholism, syphilis, cardiovascular renal disease, diabetes, trauma or any known etiologic factor, and it was chronic in character.
4. Proper drainage of the hematoma produced a complete recovery.
5. Careful search of the literature did not reveal any case of chronic subdural hematoma in which the mental features were predominating and the organic manifestations mainly absent. For these reasons this case is reported.

25 East Washington Street.

Special Article

**VITAMINS IN RELATION TO THE
PREVENTION AND TREAT-
MENT OF PELLAGRA**

W. H. SEBRELL, M.D.

WASHINGTON, D. C.

This article and others recently published or to be published comprise a new series on the present status of our knowledge of the vitamins. They have been prepared under the general auspices of the Council on Pharmacy and Chemistry and the Council on Foods. The opinions expressed are those of the authors and not necessarily the opinions of either council. Reprints are not available but the articles will be published later in book form.—Ed.

The exact number of vitamins or dietary factors in the so-called water soluble vitamin B complex that are essential to the human organism is still undetermined. There are four postulated factors about which sufficient evidence exists to warrant discussion in connection with the treatment and prevention of pellagra. These are riboflavin, or vitamin B₂(G), the rat antidermatitis factor or vitamin B₆, the filtrate factor or chick pellagra factor, and the pellagra-preventive vitamin or blacktongue-preventive factor. It is not impossible that two of these may be different names for the same substance. The field is being investigated so actively at the present time that it is almost impossible to make any conclusive statement concerning the identity of factors which have not been chemically isolated.

RIBOFLAVIN OR VITAMIN B₂(G)

There is considerable evidence that riboflavin is not the pellagra-preventive vitamin. Rhoads and Miller¹ reported that they were unable to produce blacktongue with a diet devoid of vitamin G and inferred that blacktongue is due to some factor other than vitamin G. Birch, György and Harris² failed to cure blacktongue with 30 micrograms of riboflavin per kilogram of body

From the National Institute of Health, United States Public Health Service.

1. Rhoads, C. P., and Miller, D. K.: Vitamin B₂ (G) and Canine Black Tongue, *Science* 81: 159 (Feb. 8) 1935.

2. Birch, T. W.; György, Paul, and Harris, L. J.: Vitamin B₂ Complex: Differentiation of Antiblacktongue and "P-P" Factors from Lactoflavin and Vitamin B₆ (So-Called "Rat Pellagra" Factor), *Biochem. J.* 29: 2830 (Dec.) 1935.

weight per day intraperitoneally, and György³ noted that salmon and haddock, which are good sources of the pellagra-preventive vitamin, were practically devoid of riboflavin.

Dann⁴ treated three cases of pellagra with riboflavin without success. Fouts, Lepkovsky, Helmer and Jukes⁵ treated two cases with riboflavin without success and then successfully treated two other cases with a preparation free from riboflavin. Koehn and Elvehjem⁶ failed to prevent blacktongue with a flavin supplement, and Sebrell, Hunt and Onstott⁷ were unable to cure blacktongue with relatively very large doses of a synthetic riboflavin preparation.

Although riboflavin may not be concerned in the etiology of pellagra, the foregoing evidence must not be interpreted as indicating that riboflavin may not be one of the human dietary essentials. The use of riboflavin in the treatment of neurologic lesions in a case of pernicious anemia has been reported by Kisch.⁸ Sebrell⁹ reported in 1933 the experimental production of a condition in dogs which, in view of evidence recently presented by Sebrell, Onstott and Hunt,¹⁰ was due, very probably, to riboflavin deficiency. It is not impossible that riboflavin deficiency may occur in man simultaneously with, or independently of, pellagra.

VITAMIN B₆, OR THE RAT ANTIDERMATITIS FACTOR

The exact status of vitamin B₆ has not yet been finally determined. György¹¹ and Chick, Copping and Edgar¹² have suggested that it may be identical with the Y factor of Chick and Copping.¹³ Jukes¹⁴ still questions the accuracy of the work on vitamin B₆ and states: "The demonstration of two new factors necessary for the rat, in the vitamin B complex, in addition to vitamin B and flavin, has made it difficult to interpret recent work on the vitamin B complex, particularly with regard to vitamin B₆, which is probably a mixture of the two new factors." There is evidence that vitamin B₆ is distinct from the pellagra-preventive vitamin, and it is now recognized that what has been called rat pellagra in all probability bears no relationship to human pellagra, and that the skin lesions in these experimental animals are due to a deficiency either in

riboflavin (vitamin B₂[G]), or vitamin B₆, or both. Birch, György and Harris² found that pellagra and blacktongue producing diets contained vitamin B₆ and that maize was a good source of vitamin B₆. Copping¹ also found that maize contains vitamin B₆. Walker and Wheeler¹⁵ used 285 Gm. of maize daily per patient in producing human pellagra. Dann⁴ reported that white or yellow maize meal contained vitamin B₆ and Birch and György¹⁷ also concluded that vitamin B₆ is not identical with the pellagra-preventive vitamin. Fouts, Lepkovsky, Helmer and Jukes⁵ successfully treated two cases of pellagra with a preparation free of vitamin B₆.

THE FILTRATE FACTOR OR CHICK PELLAGRA FACTOR

At the present time there is not sufficient evidence to decide definitely whether the filtrate factor or chick pellagra factor is distinct from the pellagra-preventive factor. Fouts, Lepkovsky, Helmer and Jukes⁵ successfully treated two cases of pellagra with a concentrate containing the filtrate factor prepared from rice bran. Koehn and Elvehjem⁶ cured blacktongue with a liver extract which they state was found active for chicks. Sebrell, Onstott and Hunt¹⁰ showed that another preparation containing the filtrate factor contained the blacktongue-preventive factor. Jukes¹⁴ has assayed several foods for the filtrate factor and finds striking differences between the pellagra-preventive value of foods and their filtrate factor value. He finds that beef, whole corn meal and wheat germ are of the same order of potency in filtrate factor value, although corn meal is one of the poorest sources of the pellagra-preventive vitamin, while beef and wheat germ are two of the good sources of this vitamin. This strongly suggests that the filtrate factor is distinct from the pellagra-preventive factor, but more evidence is needed before this question can be answered conclusively.

THE PELLAGRA-PREVENTIVE OR BLACKTONGUE-PREVENTIVE FACTOR

The term pellagra-preventive or blacktongue-preventive factor is applied to the substance originally postulated by Goldberger and Tanner¹⁸ as necessary for the prevention of human pellagra. There is no confusion with regard to the substance referred to when its definition is restricted to this meaning. Whether or not any of the other later identified fractions of the vitamin B complex are identical with this one is problematic, as indicated in the preceding discussion. Whether a deficiency in this factor will produce a symptom complex in rats or in any other experimental animals other than dogs remains to be demonstrated, and tests with pellagra or blacktongue are the only sound experimental methods for work on the pellagra-preventive vitamin at the present time. Human experiments served a very useful purpose before a suitable experimental animal was available and yielded information of immense value which could have been obtained in no other way. Goldberger and Wheeler

3. György, Paul: Investigations on Vitamin B₂ Complex: Distribution of Lactoflavin and of "Pellagra-Preventing Factor" (Vitamin B₂) in Natural Products of Animal Origin, *Biochem. J.* **29**: 760 (No. 3) 1935.

4. Dann, W. J.: The Vitamin G Complex: I. The Nonidentity of Rat Dermatitis Due to Vitamin B₆ Deficiency and the Dermatitis of Human Pellagra, *J. Nutrition* **11**: 451 (May) 1936.

5. Fouts, P. J.; Lepkovsky, Samuel; Helmer, O. M., and Jukes, T. H.: Successful Treatment of Human Pellagra with the "Filtrate-Factor," *Proc. Soc. Exper. Biol. & Med.* **35**: 245 (Nov.) 1936.

6. Koehn, C. J., Jr., and Elvehjem, C. A.: Studies on Vitamin G (B₆) and Its Relation to Canine Black Tongue, *J. Nutrition* **11**: 67 (Jan.) 1936.

7. Sebrell, W. H.; Hunt, D. J., and Onstott, R. H.: Lactoflavin in the Treatment of Canine Blacktongue, *Pub. Health Rep.* **52**: 235 (Feb. 26) 1937.

8. Kisch, Franz: Vitamin B₂ (Lactoflavin in der Behandlung funikulärer Myelose bei perniziöser Anämie, *Wien. med. Wchnschr.* **87**: 194 (Feb. 13) 1937.

9. Sebrell, W. H.: III. "Yellow Liver" of Dogs (Fatty Infiltration) Associated with Deficient Diets, *Nat. Inst. Health Bull.* **162**, 1933.

10. Sebrell, W. H.; Onstott, R. H., and Hunt, D. J.: The Treatment of Blacktongue with a Preparation Containing the "Filtrate Factor," and Evidence of Riboflavin Deficiency in Dogs, *Pub. Health Rep.* **52**: 427 (April 9) 1937.

11. György, Paul: Vitamin B₂ and the Pellagra-like Dermatitis in Rats, *Nature* **133**: 498 (March 31) 1934.

12. Chick, Harriette; Copping, Alice M., and Edgar, Constance E.: The Water-Soluble B-Vitamins: IV. The Components of Vitamin B₂, *Biochem. J.* **29**: 722 (No. 3) 1935.

13. Chick, Harriette, and Copping, Alice M.: The Composite Nature of the Water-Soluble Vitamin B: III. Dietary Factors in Addition to the Antineuritic Vitamin B₁ and the Antidermatitis Vitamin B₂, *Biochem. J.* **24**: 1764 (No. 6) 1930.

14. Jukes, T. H.: Further Observations on the Assay, Distribution and Properties of the Filtrate Factor, *J. Biol. Chem.* **117**: 11 (Jan.) 1937.

15. Copping, Alice M.: The Water-Soluble B Vitamins: VI. Flavin and Vitamin B₆ in Cereals, *Biochem. J.* **20**: 849 (May) 1936.

16. Walker, N. P., and Wheeler, G. A.: Influence on Epilepsy of a Diet Low in the Pellagra-Preventive Factor, *Pub. Health Rep.* **46**: 851 (April 10) 1931.

17. Birch, T. W., and György, Paul: Vitamin B₆ and Human Pellagra, *J. Soc. Chem. Ind.* **54**: 507 (May 24) 1935.

18. Goldberger, Joseph, and Tanner, W. F.: A Study of the Treatment and Prevention of Pellagra: Experiments Showing the Value of Fresh Meat and of Milk, the Therapeutic Failure of Gelatin, and the Preventive Failure of Butter and of Cod Liver Oil, *Pub. Health Rep.* **30**: 27 (Jan. 18) 1923. Goldberger and Tanner.¹⁴

and their associates¹⁹ conducted a long series of preventive tests on man. These experiments were conducted by adding the foodstuff to be tested to a known pellagra-producing diet and feeding this supplemented diet to a group of subjects. If pellagra occurred in the group, it was concluded that the food added as a supplement contained little or none of the pellagra-preventive factor in the quantity given. If no pellagra occurred in the group during one year's observation, it was concluded that the food contained the pellagra-preventive factor. These experiments were supplemented by tests with blacktongue in dogs until it was demonstrated that the two diseases were analogous.²⁰

The evidence that blacktongue of dogs and human pellagra are analogous conditions produced by a deficiency in the same dietary factor is as follows: (a) Every food or substance that has been tested in the prevention or treatment of both pellagra and blacktongue and found to be of value in one disease has been found to be of value also in the other; (b) every food or substance tested in both diseases that has proved worthless in the prevention or treatment of one has also proved worthless in the prevention or treatment of the other; (c) the symptomatology is similar in that in both diseases there is a severe stomatitis, a diarrhea, a slight degree of secondary anemia and a dermatitis of the scrotum; finally, the gross and microscopic pathologic appearances are similar.

Many experimental conditions in rats have been described as pellagra-like,²¹ but there is no evidence that a deficiency in the pellagra-preventive factor causes a dermatitis in rats. In 1934 Sebrell²² pointed out that what was being called vitamin G and assayed

by growth of rats did not necessarily bear any relationship to the pellagra-preventive value of the material. Since practically all of the vitamin G determinations of foods have been made by rat growth experiments and the results frequently expressed in terms of Sherman-Bourquin units, which is a measure of their riboflavin content, the tables of the vitamin G content of foods in the various textbooks indicate the riboflavin, and not the pellagra-preventive vitamin, content of foods. These tables therefore should not be used for the selection of foods in the treatment of pellagra. The determinations of the pellagra-preventive value of foods by Goldberger and his associates give the only data that can be safely used in the treatment of pellagra. These data are summarized in the accompanying table.

MULTIPLE DEFICIENCIES AND PELLAGRA

It has been suggested that a deficiency in more than one factor is involved in pellagra and that pellagra as it is now recognized actually consists of two or more different conditions.

In 1918 Goldberger, Wheeler and Sydenstricker²³ suggested that two separate dietary factors may be concerned in pellagra. They said: "The diagnosis of pellagra was restricted to cases presenting a definite, bilaterally, symmetrical eruption. It is suggested that, so defined, pellagra includes at least two commonly associated, etiologically distinct, though closely related, syndromes." Goldberger,²⁴ in his experiments with casein, made particular mention of the fact that the patients had symptoms diagnosed as pellagra *sine* pellagra, although they never developed skin lesions. In 1933 Wheeler²⁵ discussed at some length the possibility of there being two different conditions. Wright²⁶ described a condition in Sierra Leone characterized by glossitis and skin lesions, especially at the mucocutaneous junction, associated with or followed by disorders of the nervous system, which was cured by the use of cod liver oil and yeast. Stannus²⁷ holds that such lesions are manifestations of pellagra. Fitzgerald²⁸ described an outbreak of exfoliative glossitis with ulceration at the angles of the mouth, salivation, gastrointestinal symptoms and diarrhea, which occurred in an Assam prison. Adding 1 ounce of yeast daily to the diet was found to be of value in treatment. Moore²⁹ described a syndrome of loss of visual acuity, sore tongue, sore mouth, white patches at the edges of the lips, and scrotal or vulval rash in school children in Nigeria, which he believes due to food. Landor and Pallister³⁰ have studied a condition in the prisons of Singapore and Johore, characterized by glossitis, lesions in the angles

19. These tests are described by:

Goldberger, Joseph; Wheeler, G. A.; Lillie, R. D., and Rogers, L. M.: A Further Study of Butter, Fresh Beef and Yeast as Pellagra Preventives with Consideration of the Relation of Factor P-P of Pellagra (and Black Tongue of Dogs) to Vitamin B, Pub. Health Rep. 41: 297 (Feb. 19) 1926.

Goldberger, Joseph, and Wheeler, G. A.: A Study of the Pellagra-Preventive Action of the Tomato, Carrot and Rutabaga Turnip, *ibid.* 42: 1299 (May 13) 1927.

A Study of the Pellagra-Preventive Action of the Cowpea (*Vigna Sinensis*) and of Commercial Wheat Germ, *ibid.* 42: 2383 (Sept. 30) 1927.

A Study of the Pellagra-Preventive Action of Canned Salmon, *ibid.* 44: 2769 (Nov. 15) 1929.

Wheeler, G. A.: The Pellagra-Preventive Value of Canned Spinach, Canned Turnip Greens, Mature Onions, and Canned Green Beans, *ibid.* 46: 2663 (Nov. 6) 1931. Wheeler.²⁵

Wheeler, G. A., and Hunt, D. J.: The Pellagra-Preventive Value of Green Cabbage, Collards, Mustard Greens, and Kale, *ibid.* 48: 754 (June 30) 1933.

The Pellagra-Preventive Value of Green Onions, Lettuce Leaves, Pork Shoulder and Peanut Meal, *ibid.* 49: 732 (June 22) 1934. Goldberger and Tanner.³³

20. These experiments are described by:

Goldberger, Joseph, and Wheeler, G. A.: Experimental Black Tongue of Dogs and Its Relation to Pellagra, Pub. Health Rep. 43: 172 (Jan. 27) 1928.

Goldberger, Joseph; Wheeler, G. A.; Lillie, R. D., and Rogers, L. M.: A Further Study of Experimental Blacktongue with Special Reference to the Blacktongue Preventive in Yeast, *ibid.* 43: 657 (March 23) 1928.

A Study of the Blacktongue-Preventive Action of Sixteen Foodstuffs, with Special Reference to the Identity of Blacktongue of Dogs and Pellagra of Man, *ibid.* 43: 1385 (June 8) 1928.

Goldberger, Joseph; Wheeler, G. A.; Rogers, L. M., and Sebrell, W. H.: A Study of the Blacktongue-Preventive Value of Leached Commercial Casein, Together with a Test of the Blacktongue-Preventive Action of a High Protein Diet, *ibid.* 45: 273 (Feb. 7) 1930.

A Study of the Blacktongue-Preventive Value of Lard, Salt Pork, Dried Green Peas and Canned Haddock, *ibid.* 45: 1297 (June 6) 1930.

Sebrell, W. H.; Wheeler, G. A., and Hunt, D. J.: The Blacktongue-Preventive Value of Seven Foodstuffs, *ibid.* 50: 1333 (Sept. 27) 1935.

Wheeler, G. A., and Sebrell, W. H.: The Blacktongue (Canine Pellagra) Preventive Value of Fifteen Foodstuffs, Nat. Inst. Health Bull. 162, 1933.

21. Burr, G. O., and Burr, Mildred M.: On the Nature and Role of the Fatty Acids Essential in Nutrition, J. Biol. Chem. 86: 587 (April) 1930. Salmon, W. D.; Hayes, I. M., and Guerrant, N. B.: Etiology of Dermatitis of Experimental Pellagra in Rats, J. Infect. Dis. 43: 426 (Nov.) 1928. Parsons, Helen T.: The Physiological Effects of Diets Rich in Egg White, J. Biol. Chem. 90: 351 (Jan.) 1931.

22. Sebrell, W. H.: Pellagra, Virginia M. Monthly 61: 136 (June) 1934.

23. Goldberger, Joseph; Wheeler, G. A., and Sydenstricker, Edgar: A Study of the Diet of Nonpellagrous and of Pellagrous Households in Textile Mill Communities in South Carolina in 1916, J. A. M. A. 71: 944 (Sept. 21) 1918.

24. Goldberger, Joseph, and Tanner, W. F.: A Study of the Pellagra-Preventive Action of Dried Beans, Casein, Dried Milk and Brewers' Yeast, with a Consideration of the Essential Preventive Factors Involved, Pub. Health Rep. 40: 54 (Jan. 9) 1925.

25. Wheeler, G. A.: The Pellagra-Preventive Value of Autoclaved Dried Yeast, Canned Flaked Haddock, and Canned Green Peas, Pub. Health Rep. 48: 67 (Jan. 20) 1933.

26. Wright, E. J.: The A and B Avitaminosis Disease of Sierra Leone, from Leitch, J. Neil: Dietetics in Warm Climates, London, Harrison & Sons, Ltd., 1930, p. 367.

27. Stannus, H. S.: Deficiency Diseases in Sierra Leone and Pellagra, Tr. Roy. Soc. Trop. Med. & Hyg. 23: 627 (April) 1930.

28. Fitzgerald, G. H.: An Outbreak of Exfoliative Glossitis in an Assam Jail, Indian M. Gaz. 67: 556 (Oct.) 1932.

29. Moore, D. G. F.: Retrobulbar Neuritis and Partial Optic Atrophy as Sequelae of Avitaminosis, Ann. Trop. Med. & Parasit. 28: 295 (Oct.) 1934.

30. Landor, J. V., and Pallister, R. A.: Avitaminosis B₂. Tr. Roy. Soc. Trop. Med. & Hyg. 29: 121 (July) 1935.

of the lips, an eczematous condition of the scrotum and, in the later stages, nerve symptoms suggestive of subacute combined degeneration of the cord nearly always accompanied by dimness of vision. Patients with the glossitis and eczema of the scrotum were successfully treated with fresh brewers' yeast, autoclaved yeast, autoclaved marmite, or liver. Cod liver oil and orange juice were without value in treatment. These authors note particularly that the typical dermatitis of pellagra was not present. They state that

Stannus³² is of the opinion that these conditions are pellagra. Ruffin and Smith,³³ as a result of their work with liver fractions, think that there is a deficiency in more than one substance in pellagra, and Sydenstricker and Thomas³⁴ have postulated an intrinsic and an extrinsic factor in pellagra.

In view of the uncertainty surrounding both the number of factors in the vitamin B complex and their physiologic action, it appears not unlikely that some of the symptoms hitherto assigned to the pellagra syn-

*Pellagra-Preventive Value of Foods**

Food	Quantity Used, Gm.	Pellagra-Preventive Value	Food	Quantity Used, Gm.	Pellagra-Preventive Value
Cereals			Vegetables		
Corn meal, whole, white.....	450	None	Beans		
Cornstarch.....	366	None	Green, stringless (canned).....	550	Slight
Oats, rolled.....	400	None	Kidney, red.....	360	Fair
Rye meal.....	400	None	Navy.....	360	None
Wheat germ (ether extracted).....	150	Good	Soya.....	350	Fair
Wheat, whole.....	400	Slight	Cabbage, green (canned).....	482	Fair
Dairy Products			Carrots.....	450	Slight
Butter.....	135	Slight	Collards (canned).....	482	Good
Caseln, leached.....	85	Slight	Cowpeas.....	178	Fair
Egg, yolk (dried).....	100	Fair	Kale (canned).....	531	Good
Milk:			Lettuce, eos (canned).....	510	Slight
Buttermilk.....	1,200	Good	Mustard greens (canned).....	533	Fair
Evaporated (canned).....	...†	Fair	Onions:		
Skim, dried.....	105	Fair	Green (canned).....	502	Slight
fresh.....	...‡	Fair	Mature.....	525	None
Fruits			Peas:		
Apples, evaporated.....	250	None	Green (canned).....	450	Good
Prunes, dried.....	250	None	Green (dried).....	360	Fair
Meats and Fish			Potatoes:		
Beef:			Irish.....	450	None
Corned (canned).....	200	Good	Sweet.....	450	None
	200	Good	Spinach (canned).....	482	Fair
	325	Good	Tomato, juice from canned.....	1,200	Good
	340	Fair	Turnip greens (canned).....	482	Good
	61	Good	Turnips, rutabaga.....	453	Slight
Pork:			Miscellaneous		
Shit, fat.....	153	None	Cottonseed meal.....	200	Slight
Shoulder, lean.....	200	Good	Gelatin.....	83	None
Rabbit.....	184	Good	Liver extract (Milot's 343).....	...§	Fair
Salmon (canned).....	165	Good	Peanut meal.....	200	Good
Oils and Fats			Rice polishings.....	400	Good
Butter (see dairy products)			Yeast:		
Cod liver oil.....	128	None	Bakers', dried.....	30	Good
Cottonseed oil.....	110	None	Bakers', dried, autoclaved.....	60	Good
Lard.....	110	None	Brewers', dried.....	30	Good
			Yeast vitamin powder.....	15	Good

* Adapted from "Table Showing the Pellagra-Preventive Value of Various Foods, Pub. Health Rep. 49:754 (June 29) 1934.

† 15 cc. per kilogram of body weight.

‡ 30 cc. per kilogram of body weight.

§ Equivalent to 100 Gm. of liver.

This table is intended primarily for use in the treatment and prevention of pellagra, and only those foods are included which have been tested under controlled conditions in either human beings or dogs or both. In the absence of a quantitative method of assaying the pellagra-preventive vitamin, only the most general terms can be used to designate the pellagra-preventive value of a food. In order to make a division into groups which will be of practical value without being unwarrantedly exact, the words "good," "fair," "slight" and "none" have been selected. The quantity used must be kept in mind in each instance, since smaller amounts than those indicated would in all probability have less value.

"Good" signifies that the indicated quantity of food contained enough of the pellagra-preventive factor to prevent the disease. This is the most valuable class of foods in the prevention and treatment of pellagra.

"Fair" signifies that the indicated quantity of food showed appreciable and in some instances considerable pellagra-preventive value, but one or more of the experimental subjects developed the disease, usually after considerable delay. Thus, a food under this heading contains enough of the vitamin to be of value but should not be relied on alone in the treatment and prevention of the disease. The principal value of these foods lies in the variety of items afforded as adjuncts to the good sources of the preventive factor.

"Slight" signifies that the indicated quantity of food, although failing to prevent the disease, caused a slight delay in onset. Practically, this group may be disregarded in the treatment and prevention of pellagra.

"None" signifies that, in the quantity used, the results of the experiments indicate that the food contains either none of the preventive factor or such a small amount that it may be regarded, for practical purposes, as being entirely without value in the treatment and prevention of pellagra.

"there is much resemblance between the disease we have described and pellagra, but we feel that it would be incorrect to use the term pellagra for it and prefer to consider it avitaminosis B₂." Aykroyd and Krishnan³¹ describe a stomatitis in children in South India due to a deficiency of one or more factors in the vitamin B₂ complex. They did not observe any involvement of the central nervous system and nothing suggesting pellagrous dermatitis or diarrhea was present in their cases. The disease is curable by fresh, unheated or autoclaved yeast, liver and skim milk. The suggestion is made that the condition may be a manifestation of flavin deficiency.

31. Aykroyd, W. R., and Krishnan, B. G.: Stomatitis Due to Vitamin B₂ Deficiency, *Indian J. M. Research* 2:4:411 (Oct.) 1936.

drome may be manifestations of deficiencies in factors other than the one responsible for the typical attack with characteristic dermal lesions for which the names "pellagra" and "pellagra-preventive factor" obviously should be retained. However, since the factors of the vitamin B complex, fortunately, are closely associated in many foodstuffs, these questions become of serious import in treatment only when one begins to treat pellagra with purified vitamin fractions. This has been

32. Stannus, H. S.: Pellagra and Pellagra-like Conditions in Warm Climates: III, *Trop. Dis. Bull.* 33:885 (Dec.) 1936.

33. Ruffin, J. M.; Persons, E. R.; Harvey, H. I., and Smith, D. T.: Evidence for the Existence of Two Factors Necessary for the Successful Treatment of Pellagra or Experimental Canine Black Tongue, *J. Clin. Investigation* 16:663 (July) 1937.

34. Sydenstricker, V. P., and Thomas, J. W.: Some Factors in the Etiology of Pellagra, *South. M. J.* 30:14 (Jan.) 1937.

pointed out recently by Sebrell, Onstøtt and Hunt¹⁰ in connection with a purified rice bran fraction which contained enough of the pellagra-preventive vitamin to cure blacktongue, but the experimental animals died as a result of flavin deficiency. As the various substances in the vitamin B complex are isolated and chemically identified, there is little doubt that in time the factor responsible for the skin lesions in pellagra will be identified. With it will come the solution of the question as to whether the varied clinical changes which in the past have been called pellagra are the result of a deficiency in one substance.

* SUNLIGHT AS A FACTOR IN PELLAGRA

It has been recognized since the very earliest studies on pellagra that sunlight has a deleterious effect on pellagrins. Frapolli³⁵ in 1771, Albera³⁶ in 1784, Gherardini³⁷ in 1792 and Calderini³⁸ in 1844, among other early students of the disease, refer to the effect of sunlight in pellagra. Larriba³⁹ in 1881 thought that the intensity of the erythema depends directly on an internal factor and on the action of sunlight. The literature is extensively quoted by Smith and Ruffin,⁴⁰ who, since the demonstration that a deficient diet is the primary cause of pellagra, have reopened the question of the secondary importance of sunlight. These authors, by keeping pellagrins on a deficient diet, have succeeded in causing the dermatitis to reappear in thirteen out of thirty-five patients by exposing them to the sun. Fouts and Zervas⁴¹ report the reappearance of the dermatitis by exposure to sunlight in a case in which the dermatitis was clearing rapidly and another case in which the dermatitis appeared on the hands after a fifteen minute exposure to the sun. Bigland⁴² states that he was unable to produce skin changes by exposure to the sun, although he thinks that the sun's rays play an important part in the production of the pellagrous dermatitis. Spies⁴³ produced the dermatitis of pellagra in four volunteers who were kept out of direct sunlight while receiving a pellagra-producing diet, and in eight cases the dermatitis healed in spite of long, daily exposure to direct sunlight. In ten patients there was no effect from exposure to radiation from a quartz mercury vapor arc lamp. Crutchfield⁴⁴ saw no appreciable effect on treating ten patients with very small amounts of ultraviolet rays and thinks that trauma is a more important factor than sunlight. Niles⁴⁵ states that exposure to the sun or to radiant heat from a stove or furnace will bring out an erythema in a pellagrin. Bass⁴⁶ reports the development of pellagrous dermatitis from exposure to heat from a stove, and Smith and Ruffin⁴⁰ report three cases

in which severe symptoms followed exposure to a red-hot stove in one instance, a brush fire in another, and an electric heater in a third. Bass⁴⁷ notes that exposure to heat, pressure, trauma and irritating chemicals, as well as sunlight, may cause the skin lesions. Masso⁴⁸ has reported a moderate elimination of uroporphyrin and a copious elimination of coproporphyrin in two cases of pellagra. Sydenstricker and Thomas,⁴⁹ on the basis of the reporting of porphyrinuria in cases of pellagra by Bassi⁴⁹ and Ellinger and Dojmi,⁵⁰ suggest that the dermatitis in pellagra is due to photosensitization by hematoporphyrin. It has not been conclusively established that the excretion of abnormal amounts of any of the porphyrins is a constant observation in pellagra.^{50a} Stannus⁵¹ states that "to those who have studied pellagra closely it has become obvious that there is a tendency for the exanthem to occur in any area of the skin open to trauma of any kind, using the word in its widest sense."

It appears, therefore, on the basis of the evidence now available, that the action of sunlight in pellagra is to be regarded as that of an irritant, and pellagrins should be protected from exposure to sunlight and skin irritants of all kinds. It should be recognized that this is a point of relatively minor importance in treatment and that recovery cannot be expected unless the proper dietary corrections are made.

LIVER EXTRACTS, ANTIPERNICIOUS ANEMIA FACTORS AND PELLAGRA

The first report on the probable value of liver extracts in pellagra is that by Goldberger and Sebrell,⁵² who tested Liver Extract-Lilly in blacktongue and found that in the quantity used it had a therapeutic and preventive effect. Rhoads and Miller⁵³ produced a condition in dogs which they described as chronic blacktongue with anemia, which they were able to prevent by feeding 4 Gm. of Liver Extract-Lilly daily. They failed to demonstrate any improvement, however, on treating the condition with large doses of liver extract parenterally, and the daily intramuscular injection of the liver extract from 50 Gm. of whole liver failed to prevent the anemia and glossitis. The first report on the use of liver extracts in pellagra is that of Ramsdell and Magness⁵⁴ in 1933. These workers treated twenty-two cases by the intramuscular injection daily of 2 cc. of Liver Extract-Lilly, at the same time placing the patients on the general hospital diet. They state that the results were spectacular in that the appetite returned in from three to seven days and there was rapid clinical improvement in all cases. Ramsdell⁵⁵ later added three cases to the series. Ruffin and Smith,⁵⁶ however, saw little or no improvement in five

35. Frapolli, Francis: *Animadversiones in Morbum vulgo Pelagrum*, Milan, 1771.

36. Albera, G. M.: *Trattato teorico pratico delle malattie dell' insolato di primavera volgarmente dette della pellagra*, Del medico Fisico, per Gaetano Motta e Giorgio Pedemonte, 1784.

37. Gherardini, Michaeli: *Geschichte des Pellagra aus dem Italienischen*, Lemgo im Berlage der Meyerschen Buchhandlung, 1792.

38. Calderini, Carlo-Gallo: *Rapport intorno ai pellagrosi d'ambo i sessi stati assoggettati nell' Ospedale Maggiore di Milano alla cura balnearia*, nella estate dell'anno 1843, *Annali Universali di Medicina* 110: 26, Milan, 1844.

39. Larriba, Don Gregorio Calmarza: *La Pellagra*, Calatayud, Imprenta del diario, 1881.

40. Smith, D. T., and Ruffin, J. M.: *Effect of Sunlight on the Clinical Manifestations of Pellagra*, *Arch. Int. Med.* 59: 631 (April) 1937.

41. Fouts, P. J., and Zervas, L. G.: *Pellagra in Indiana and Its Treatment*, *J. Indiana M. A.* 27: 196 (May) 1934.

42. Bigland, A. D.: *The Pellagra Outbreak in Egypt: 1. Pellagra Among Ottoman Prisoners of War*, *Lancet* 1: 947 (May 1) 1920.

43. Spies, T. D.: *Relationship of Pellagrous Dermatitis to Sunlight*, *Arch. Int. Med.* 56: 920 (Nov.) 1935.

44. Crutchfield, E. D.: *Pellagra, with Special Reference to the Skin and Mucous Membrane*, *Arch. Dermat. & Syph.* 17: 650 (May) 1928.

45. Niles, G. M.: *The Treatment of Pellagra*, *J. A. M. A.* 62: 285 (Jan. 24) 1914.

46. Bass, C. C.: *Pellagra*, *M. Clin. North America* 12: 1181 (March) 1929.

47. Bass, C. C.: *Pellagra*, *M. Clin. North America* 9: 869 (Jan.) 1926.

48. Masso, Mario: *Sensibilizzazione alla luce e porfirine nei riguardi di affezioni oscuri (pellagra, delirio acuto): Nota preliminare*, *ibid.* 69 (Oct. 29) 1932.

49. Sydenstricker and Thomas: *in* *la patogenesi della pellagra*, *Clin. med. ital.* 6.

50. Ellinger, P., and Dojmi, L.: *Note on the Presence of Porphyrin in the Urine of Pellagra Patients*, *J. Soc. Chem. Ind.* 54: 507, 1935.

50a. Since the manuscript was prepared, Beckh, W.; Ellinger, P., and Spies, T. D.: (*Quart. J. Med.* 6: 305 [July] 1937) have reported a further study on porphyrinuria in pellagra with inconclusive results.

51. Stannus, H. S.: *Pellagra and Pellagra-like Conditions in Warm Climates: II*, *Trop. Dis. Bull.* 33: 815 (Nov.) 1936.

52. Goldberger, Joseph, and Sebrell, W. H.: *The Blacktongue-Preventive Value of Minot's Liver Extract*, *Pub. Health Rep.* 45: 3064 (Dec. 12) 1930.

53. Rhoads, C. P., and Miller, D. K.: *Production in Dogs of Chronic Blacktongue with Anemia*, *J. Exper. Med.* 58: 585 (Nov.) 1933.

54. Ramsdell, R. L., and Magness, W. H.: *Parenteral Liver Extract Therapy in the Treatment of Pellagra: A Preliminary Report*, *Am. J. M. Sc.* 185: 568, 1933.

55. Ramsdell, R. L.: *The Treatment of Pellagra: Results Obtained by Liver Extract Used Parenterally in Twenty-Five Cases*, *Texas State J. Med.* 29: 211 (July) 1933.

56. Ruffin, J. M., and Smith, D. T.: *The Treatment of Pellagra with Certain Preparations of Liver*, *Am. J. M. Sc.* 187: 512 (April) 1934.

patients kept on a diet deficient in the pellagra-preventive vitamin and given daily doses of 5 cc. of Liver Extract-Lilly intramuscularly. The treatment of four of these patients was changed to 90 cc. of an aqueous extract of liver daily, by mouth, with rapid recovery. They treated ten additional patients with 90 cc. of the aqueous liver extract daily, by mouth, with satisfactory results. These authors attribute the successful results of Ramsdell and Magness to the good diet used by the latter. Spies⁵⁷ put sixteen patients on a diet deficient in the pellagra-preventive factor and gave ten of these 80 cc. of liver extract intravenously, and six from 24 to 30 cc. of liver extract intramuscularly. All the patients quickly responded. The failure of the treatment of Ruffin and Smith possibly may be explained by the smaller doses used by them or by the fact that a different liver preparation was used. Fouts and Zervas⁴¹ treated four cases of pellagra with liver extract by mouth and intravenously, with satisfactory results. Spies⁵⁸ recommends the oral administration of from 75 to 100 Gm. of liver extract daily, or from three to five intravenous doses of 20 cc. each in the treatment of severe cases of pellagra. Ruffin and Smith⁵⁹ report rapid and complete recovery of twenty out of twenty-one cases of pellagra from the use of a daily dose of a liquid liver extract (Valentine) derived from 675 Gm. of liver (90 cc.) for from five to twenty-five days; with Liver Extract-Lilly intramuscularly in doses derived from 15 to 20 Gm. of liver, only two of nine patients recovered; with Lederle's parenteral liver extract in doses derived from 100 Gm. of liver, none of eight recovered, and with Parke, Davis's liver extract intravenously, one of three recovered. These were treated, however, for only one and two days with doses derived from 200, 250 and 500 Gm. of liver. These results do not agree with the experience of Spies,⁵⁸ who thinks that the treatment of severe cases is most successful when large doses of liver extract are used parenterally.

The evidence appears to warrant the therapeutic use of liver extracts, both orally and parenterally, in severe cases of pellagra. It should be borne in mind that liver extracts are prepared and assayed for use in the treatment of pernicious anemia and that their value in pernicious anemia does not necessarily bear any relationship to their value in pellagra. Therefore, large doses are essential. Their principal value would appear to be as an adjunct to yeast and the dietary treatment, and as a means of parenteral administration of the vitamin when severe vomiting or diarrhea makes the retention and utilization of food by mouth difficult or impossible. They should be used in very liberal doses in conjunction with yeast, milk, lean meat, and all the other foods rich in the pellagra-preventive vitamin.

The possibility that the pellagra-preventive vitamin and the extrinsic antipernicious anemia factor may be identical or related substances has attracted some attention. Before riboflavin was differentiated from the other factors in the vitamin B complex, Strauss and Castle⁶⁰ suggested that the two factors were identical, since they found substances containing the antipernicious anemia factor also to contain the rat growth

promoting vitamin G. Strauss and Castle⁶¹ obtained a response in pernicious anemia with an incubated mixture of normal gastric juice and an autolyzed yeast preparation, and Miller and Rhoads,⁶² using a modified blacktongue-producing diet, described a symptom complex in swine characterized by lesions of the buccal mucosa, achlorhydria, and anemia associated with a loss of the anti-pernicious anemia activity of the gastric secretion. Spies⁵⁸ showed that desiccated hog stomach (Ventriculin) has therapeutic value in pellagra, and Spies and Grant⁶³ also suggested that the antianemic factor may be vitamin G or some closely related factor. Later, Spies, Payne and Chinn⁶⁴ treated cases of pernicious anemia with autoclaved yeast incubated with normal human gastric juice and treated pellagrins with the same lot of autoclaved yeast. There was no remission of the pernicious anemia, although the pellagra was cured. Wills⁶⁵ investigated the hematopoietic effect of several preparations containing the B vitamins, and Wills and Naish⁶⁶ found no response in pernicious anemia with an egg white preparation rich in vitamin B₂. Davidson,⁶⁷ from an investigation of autolyzed yeast products (marmite) in sixteen cases of pernicious anemia, concludes that the hematopoietic factor in marmite, liver and liver extract is not vitamin B₂. Salah⁶⁸ found that the achyllic gastric juice from five pellagrins contained the hematopoietic principle as determined by the rat reticulocyte response and concludes that the extrinsic hematopoietic principle is different from the pellagra-preventive factor. Stare and Thompson⁶⁹ were unable to obtain a hematopoietic response in pernicious anemia with purified hepatoflavin. Subbarow, Jacobson and Fiske⁷⁰ have isolated a fraction from liver which they find both reticulocytogenic in the guinea-pig and therapeutically potent in blacktongue, although the variations in the response of pellagrins to various liver extracts reported by Ruffin and Smith⁵⁹ suggest that the two substances are different. The evidence therefore favors the view that the pellagra-preventive factor and the extrinsic anti-pernicious anemia factor are different substances. Further work on the identification of the factors involved in both diseases is necessary before conclusions can be drawn with regard to the entire lack of relationship between the etiologic factors in the two diseases.

YEAST IN PELLAGRA

Yeast was introduced in the treatment of pellagra by Goldberger and Tanner,²⁴ who used 1 Gm. of dried yeast per kilogram of body weight in treating the disease. Their experience led them to believe that a smaller dose was sufficient, particularly when combined with

57. Spies, T. D.: Observations on the Treatment of Pellagra, *J. Clin. Investigation* 13: 807 (Sept.) 1934.

58. Spies, T. D.: The Treatment of Pellagra, *J. A. M. A.* 104: 1377 (April 20) 1935.

59. Ruffin, J. M., and Smith, D. T.: A Clinical Evaluation of the Potency of Various Extracts of Liver in the Treatment of Pellagra, *South. M. J.* 30: 4 (Jan.) 1937.

60. Strauss, M. B., and Castle, W. B.: The Nature of the Extrinsic Factor of the Deficiency State in Pernicious Anemia and in Related Macrocytic Anemias: Activation of Yeast Derivatives with Normal Human Gastric Juice, *New England J. Med.* 207: 55 (July 14) 1932.

61. Strauss, M. B., and Castle, W. B.: The Extrinsic (Deficiency) Factor in Pernicious and Related Anemias, *Lancet* 2: 111 (July 16) 1932.

62. Miller, D. K., and Rhoads, C. P.: Experimental Production of Loss of Hematopoietic Elements of Gastric Secretion and of Liver in Swine with Achlorhydria and Anemia, *J. Clin. Investigation* 14: 153 (March) 1935.

63. Spies, T. D., and Grant, Jean: An Experimental Study of a So-Called "Pellagra-Producing" Diet, *Am. J. Physiol.* 104: 18 (April) 1933.

64. Spies, T. D.; Payne, Warren, and Chinn, A. B.: A Note on the Relationship of Pellagra to Pernicious Anemia, *Proc. Soc. Exper. Biol. & Med.* 32: 328 (Nov.) 1934.

65. Wills, Lucy: The Nature of the Hemopoietic Factor in Marmite, *Lancet* 1: 1283 (June 17) 1935.

66. Wills, Lucy, and Naish, Alice: A Case of Pernicious Anemia Treated with Vitamin B₂ from Egg White, *Lancet* 1: 1286 (June 17) 1935.

67. Davidson, L. S. P.: Autolyzed Yeast Products in the Treatment of Anemia, *Brit. M. J.* 2: 481 (Sept. 9) 1933.

68. Salah, M.: The Demonstration of the Hemopoietic Principle, *Tr. Roy. Soc. Trop. Med. & Hyg.* 29: 299 (Nov.) 1935.

69. Stare, F. J., and Thompson, L. D.: Hepatoflavin and Pernicious Anemia, *Proc. Soc. Exper. Biol. & Med.* 33: 64 (Oct.) 1935.

70. Subbarow, Y.; Jacobson, B. M., and Fiske, C. H.: The Separation of the Substances in Liver Which Are Reticulocytogenic in the Guinea-Pig and Which Are Therapeutically Effective in Experimental Canine Black Tongue, *New England J. Med.* 212: 663 (April 11) 1935.

proper dietary treatment, and Goldberger, Wheeler and Tanner⁷¹ finally recommended a daily dose of between 15 and 30 Gm. Walker and Wheeler¹⁶ cured experimental pellagra with 30 Gm. of dried powdered yeast daily, while the patients remained on the deficient diet, and Wheeler²⁶ prevented pellagra with a daily dose of 60 Gm. of autoclaved, dried bakers' yeast. Spies, Chinn and McLester⁷² recently have used even larger doses in treatment. No evidence of deleterious effects from overdosage with pure dried yeast have been reported and it is essential that very large doses be given if treatment is to be successful. It becomes obvious that the use of moist yeast cakes or compressed yeast tablets is out of the question, since a moderate daily dose of 10 grain tablets would be 100 tablets. Therefore the only practical method of administration is in the form of pure dried powdered yeast, which must be given in terms of tablespoonfuls. Anything less than this represents insufficient treatment and may lead to failure to secure satisfactory results. Yeast may be conveniently administered stirred into milk, tomato juice and table syrup. A bouillon may be made with warm water and salt, it may be sprinkled on cooked cereals, and Spies⁴¹ has given it successfully in eggnogs.

NICOTINIC ACID AND PELLAGRA

Recent developments have indicated that nicotinic acid may prove to be a valuable therapeutic agent in the treatment of pellagra. Elvehjem, Madden, Strong and Woolley⁷³ have reported that nicotinic acid and nicotinic acid amide will cure blacktongue of dogs. Street and Cowgill⁷⁴ noted beneficial effects in two dogs with chronic blacktongue, and Chick, Macrae, Martin and Martin⁷⁵ cured a similar condition in swine with nicotinic acid. Sebrell, Onstott, Fraser and Daft⁷⁶ have confirmed Elvehjem's results and find that 6 mg. of nicotinic acid twice a week will prevent the disease in dogs on a blacktongue-producing diet during an experimental period of six months. Elvehjem, Madden, Strong and Woolley⁷³ suggested clinical trial of their material in human pellagra. This was also suggested editorially in *THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION*.⁷⁷ An editorial in the *British Medical Journal*⁷⁸ has suggested the trial of trigonellin, the methylbetaine of nicotinic acid.

Spies, Cooper and Blankenhorn⁷⁹ noted improvement in the mucous membrane lesions in four pellagrins within twelve hours after administering nicotinic acid. Fouts, Helmer, Lepkovsky and Jukes⁸⁰ reported that, following the administration of 500 mg. of nicotinic acid daily to three patients and 1 Gm. daily to one patient with pellagra, improvement was as satisfactory as that obtained by administering liver filtrate, except

for an increase in the time required for complete disappearance of the dermatitis.

Harris⁸¹ found that one-third Gm. of nicotinic acid daily hastened subsidence of erythema in five cases of pellagra. He has mentioned the possibility that nicotinic acid may not be the sole major deficiency in some pellagra-producing diets.

Spies⁸² observed beneficial effects in fifteen cases and has noted that increased porphyrinuria associated with pellagra disappeared. He recommends the daily administration of 500 mg. of nicotinic acid in 100 mg. doses by mouth or 40 to 80 mg. in sterile physiologic solution of sodium chloride in 10 to 20 mg. doses. He also recommends that all patients be given a well balanced diet when nicotinic acid is used as a supplement.

Smith, Ruffin and Smith⁸³ report recovery of one patient after the administration of 60 mg. of nicotinic acid daily for twelve days.

Spies, Cooper and Blankenhorn⁸⁴ treated seventeen cases (apparently including the fifteen cases previously reported by Spies⁸²) with nicotinic acid. They also mentioned personal communications from other workers citing nine other favorable cases. These authors noted rapid improvement in the mucous membrane lesions and in erythematous skin lesions. They found that advanced, moist ulcerated skin lesions did not seem to be especially benefited and conclude that nicotinic acid is a potent therapeutic agent for treating the mucous membrane lesions of pellagra.

It appears, therefore, that nicotinic acid is either the pellagra-preventive vitamin, or a provitamin or that it is only one of two or more substances necessary for the prevention of all the symptoms described as pellagra or that it may be conjugated with other substances in the body into a more complex essential material. The latter possibility is suggested by the fact that Warburg's enzymes, diphosphonucleotide and triphosphonucleotide, each contain a molecule of nicotinic acid.

Smith, Ruffin and Smith⁸³ have suggested mixing nicotinic acid with table salt as a means of preventing pellagra. This suggestion appears to be premature because there is no information available on the effectiveness of nicotinic acid in the prevention of the disease and because so little is known about its physiologic action. It has been shown further that the diets on which pellagra develop are also deficient in other respects. Attempts to prevent the disease by the widespread use of nicotinic acid might allow the symptoms of vitamin B₁ deficiency, protein deficiency, riboflavin deficiency or mineral deficiency to replace pellagra as a nutritional problem in this country.

Sebrell, Onstott and Hunt¹⁰ and Sebrell and Onstott⁸⁵ have found that dogs on a blacktongue-producing diet to which substances containing the blacktongue-preventive factor are added will die unless riboflavin is also present.

Therefore, although it may be desirable at some future time to attempt to prevent pellagra by the use of nicotinic acid mixed with some commonly used

71. Goldberger, Joseph; Wheeler, G. A., and Tanner, W. F.: Yeast in the Treatment of Pellagra and Black Tongue. A Note on Dosage and Mode of Administration, *Pub. Health Rep.* **40**: 927 (May 8) 1925.

72. Spies, T. D., Chinn, Austin, and McLester, J. B.: Treatment of Endemic Pellagra, *South. M. J.* **20**: 18 (Jan.) 1937.

73. Elvehjem, C. A.; Madden, R. J.; Strong, F. M., and Woolley, D. W.: Relation of Nicotinic Acid and Nicotinic Acid Amide to Canine Black Tongue, *J. Am. Chem. Soc.* **59**: 1767 (Sept.) 1937.

74. Street, H. R., and Cowgill, G. R.: The Cure of Canine Blacktongue with Nicotinic Acid, *Proc. Soc. Exper. Biol. & Med.* **37**: 547 (Dec.) 1937.

75. Chick, Harriette; Macrae, T. F.; Martin, A. J. P., and Martin, C. J.: Curative Action of Nicotinic Acid on Pigs Suffering from the Effects of a Diet Consisting Largely of Maize, *Biochem. J.* **32**: 10 (Jan.) 1938.

76. Sebrell, W. H.; Onstott, R. H.; Fraser, H. F., and Daft, F. S.: Read before the American Institute of Nutrition, March 30, 1938.

77. Relation of Nicotinic Acid to Human Pellagra, editorial, *J. A. M. A.* **109**: 1203 (Oct. 9) 1937.

78. Modern Views on Pellagra, editorial, *Brit. Med. J.* **1**: 127 (Jan. 15) 1938.

79. Spies, T. D.; Cooper, Clark, and Blankenhorn, M. A.: The Use of Nicotinic Acid in the Treatment of Pellagra. Read before the Central Society for Clinical Research, Chicago, Nov. 5, 1937.

80. Fouts, P. J.; Helmer, O. M.; Lepkovsky, Samuel, and Jukes, T. H.: Treatment of Human Pellagra with Nicotinic Acid, *Proc. Soc. Exper. Biol. & Med.* **37**: 405, 1937.

81. Harris, L. J.: Nicotinic Acid and the Pellagra-Preventing ("P. P.") Vitamin, *Chem. & Ind.* **56**: 1134 (Dec. 18) 1937 (from an address to the Birmingham University Biochemical Society, Dec. 9, 1937).

82. Spies, T. D.: The Response of Pellagrins to Nicotinic Acid, *Lancet* **1**: 252 (Jan. 29) 1938.

83. Smith, D. T.; Ruffin, J. M., and Smith, S. G.: Pellagra Successfully Treated with Nicotinic Acid: A Case Report, *J. A. M. A.* **109**: 2054 (Dec. 18) 1937.

84. Spies, T. D.; Cooper, Clark, and Blankenhorn, M. A.: The Use of Nicotinic Acid in the Treatment of Pellagra, *J. A. M. A.* **110**: 622 (Feb. 26) 1938.

85. Sebrell, W. H., and Onstott, R. H.: Riboflavin Deficiency in Dogs, *Pub. Health Rep.* **53**: 83 (Jan. 21) 1938.

southern article of diet, the safest procedure at present would appear to be to continue vigorously our efforts to prevent the disease by improving the diet, using nicotinic acid as individual circumstances indicate, and leaving the possibility of its uncontrolled administration to a large section of our population until additional information is available.

THE DIET IN THE TREATMENT OF PELLAGRA

In the present chaotic state of our knowledge about the B vitamins, the successful treatment of pellagra is founded on the use of adequate amounts of substances that have been shown experimentally to be most effective in the treatment and prevention of pellagra.

The earliest experiments of Goldberger and Tanner¹⁸ demonstrated the value of the addition of milk, lean meat and legumes to the diet of the pellagrins. The data on the value of a variety of foods in pellagra are condensed in the table for ease of reference. Goldberger and Sebrell⁸⁶ emphasize the point that in mild cases of pellagra careful feeding is all that is needed. Spies⁸⁷ also finds that mild cases can be treated effectively by a well balanced diet of 4,000 calories or more daily, and adequate rest. The severer cases require more energetic treatment. The severer the case the more important it is that the patient shall eat, and since anorexia is a very common symptom it requires careful individual attention in order to make certain that the patient takes and retains the required food. The main reliance should be placed on large quantities of milk, lean meats, liver, and the other foods listed in the table as good sources of the pellagra-preventive vitamin.

The principal features, in brief, of the dietary management of pellagra recommended by Goldberger and Sebrell⁸⁶ in 1933 are as follows: A food intake of 3,000 calories a day should be the aim (in mild cases correction of the diet is all that is needed). Milk should be the principal item of diet; beef juice or meat soups and broths in small quantities at frequent intervals in gradually increasing amounts; solid food, particularly fresh lean meat and liver as soon as the patient's digestive system will permit; pure dried yeast in one-half to 1 ounce (7.5 to 15 Gm.) doses daily in milk, tomato juice or table syrup, and liver extracts in liberal doses in difficult cases. It should be particularly emphasized that "... success in treatment of the individual case will be in almost direct proportion to the attention devoted to the proper feeding of the patient." Spies, Chinn and McLester⁸⁸ used a similar scheme of treatment which differed essentially in an increase in the food intake to about 4,500 calories a day and an increase in the dose of yeast to from 180 to 270 Gm. daily. Forty-seven of fifty hospital patients with severe pellagra were successfully treated. It is probable that the three deaths were the result of complications.

In view of the foregoing, the essential points in the treatment of pellagra are:

1. Inclusion in the diet of at least 1 quart (liter) of milk daily.
2. A diet of from 3,000 to 4,000 calories or more daily containing, in addition to milk, lean meats, liver and other foods rich in the pellagra-preventive vitamin as given in the table.

3. Not less than 30 Gm. and up to 200 Gm. or more daily of pure dried powdered yeast, depending on the severity of the attack.

4. Liver extracts, either orally or parenterally, in very large daily doses in the severe cases.

5. Feedings at frequent intervals and careful, individual nursing, in order to see that the patient actually eats and retains the large amount of food necessary.

6. Symptomatic treatment as indicated.

PREVENTION OF RECURRENCE

Since the disease develops as a direct result of a deficient diet, it is to be expected that it will recur if the patient returns to his former diet, as soon as his supply of the preventive factor is again depleted. Recurrence, therefore, can be prevented only by bringing about a permanent change in the patient's dietary habits. The pellagrins should not be told to stop eating his corn-bread, grits and syrup. These foods are cheap sources of energy, and it is useless and inadvisable to forbid the pellagrins to eat them. He should be advised to add to these foods the pellagra-preventive foods which he has some prospect of obtaining, such as green, leafy vegetables, fresh or canned milk or buttermilk, lean pork instead of fat pork, canned salmon, haddock and corned beef, poultry and rabbits. It is much more likely that he will follow this advice in some measure than that he will give up his established, basic dietary habits. Dietary advice should not be given in general terms. The dietary habits of each patient should be given careful, individual consideration in detail if a practical means of permanent improvement is to be devised. This can be accomplished best with the expert assistance of a nutritionist or well trained dietitian.

PREVENTION

The prevention of endemic pellagra is simple in theory but difficult in practice. If every normal person received enough of the foods containing the pellagra-preventive vitamin there would be no endemic pellagra. This means eating such foods as lean meat, milk, fish and a variety of vegetables containing the pellagra-preventive vitamin. Even if the patient is economically able to obtain these foods, such factors as availability and dietary habits and customs must be taken into consideration. Goldberger and Sydenstricker⁸⁹ and Wheeler and Sebrell⁹⁰ have pointed out the importance of the home production of foods containing the pellagra-preventive vitamin, especially during the late winter and early spring, and the use of dried, powdered yeast as the most important preventive measures in the areas of the United States in which pellagra is endemic. The widespread distribution of powdered yeast, either free or at the cheapest possible price, is the most effective method of immediate control known. However, this is only a palliative measure, which must be repeated each spring in order to keep down the incidence of the disease. DeKleine⁹¹ also believes that home gardening and the distribution of pure, powdered yeast are two of the most important measures to be employed in the prevention of endemic pellagra. Permanent control can be obtained only by bringing about permanent changes in dietary habits.

86. Goldberger, Joseph, and Sebrell, W. H.: Pellagra, in *Tice's Practice of Medicine* 9: 205, 1933.

87. Spies, T. D.: The Medical Treatment of Early Pellagra, *J. A. M. A.* 105: 1028 (Sept. 28) 1935.

88. Spies, T. D.; Chinn, Austin, and McLester, J. B.: Severe Endemic Pellagra: A Clinical Study of Fifty Cases with Special Emphasis on Therapy, *J. A. M. A.* 108: 833 (March 13) 1937. Spies, Chinn and McLester.

89. Goldberger, Joseph, and Sydenstricker, Edgar: Pellagra in the Mississippi Flood Area: Report of An Inquiry Relating to the Prevalence of Pellagra in the Area Affected by the Overflow of the Mississippi and Its Tributaries in Tennessee, Arkansas, Mississippi and Louisiana in the Spring of 1927, *Pub. Health Rep.* 42: 2706 (Nov. 4) 1927.

90. Wheeler, G. A., and Sebrell, W. H.: The Control of Pellagra, *J. A. M. A.* 99: 95 (July 9) 1932.

91. DeKleine, William: Recent Trends in Pellagra, *Am. J. Pub. Health.* 27: 595 (June) 1937.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION
OF THE FOLLOWING REPORTS. H. A. CARTER, Secretary.

THERM-O-RAY PORTABLE SHORT WAVE GENERATOR NOT ACCEPTABLE

Manufacturer: Therm-O-Ray Corporation, 420 Lexington
Avenue, New York.

The Therm-O-Ray Short Wave Generator is a diathermy unit advertised and sold directly to the public by lay salesmen. The portable unit weighs approximately 24½ pounds. It comes in a carrying case which resembles a small suitcase. When this is opened, the panel shows three instruments. On the right hand side there is a meter control which regulates the volume of the current. There is a millimeter on the left hand side with figures up to 1500 and red marking slightly beyond that point to indicate danger. In the center, below the open grille work through which the light from the tube is seen, there is a clock dial with figures up to thirty minutes. It is set at the beginning of the treatment for a given length of time and then turns off automatically.

The current is supplied by a single tube. The unit is said to be available for use with either alternating or direct current. It is claimed that the unit will not give an electric shock.

An investigator appointed by the Council called at the New York address of the corporation. The firm's name was not listed in the directory in the lobby of the office building nor did it appear on the door of room 1449. Apparently the firm uses the offices of an investment security company for its headquarters. An attendant connected with that office gave the investigator information requested and in addition a copy of the firm's advertising material. The attendant gave the investigator a treatment for the latter's self-diagnosed condition and the demonstrator offered to send a technician to the investigator's home for further demonstration. He stated that the machine could be used by various members of the family for a number of different conditions. No medical supervision was mentioned.

The advertising matter "Therm-O-Ray, Portable Short Wave Generator for Home Use" has been examined by the Council. The tone of this entire pamphlet is unscientific and obviously written to appeal to the layman. It contains such statements as the following: "Stop that Agonizing Pain! . . . Treat by Inner Heat . . . It relieves without regrets . . . white blood cells—the battle fleet of the blood-stream . . . Inner heat . . . thins the blood . . . When these poisons are carried away the trouble vanishes."

Many suggestions are given for home treatment, including the following: "Daily treatment of 20 minutes will keep internal heat in the body until trouble decreases." A coupon appears in the pamphlet carrying this notation to be filled in by the prospective customer, "Have your technician give me a home demonstration on . . . Have your technician phone for an appointment." A number of diseases are listed as the therapeutic indications for this particular unit, including high blood pressure, pneumonia, bronchitis and sinus disorders.

It is noted in the directions that the patient is warned to space the electrode with clothing or bath-towelings "to absorb whatever perspiration there may be since the rubber of the electrode would prevent either its absorption or evaporation." There is no mention of the real necessity for spacing, to prevent burns! Apparently the machine may be rented, purchased for cash or on the instalment plan, and it is said to be guaranteed for one year.

These selling methods are definitely detrimental to rational therapeutics for the following reasons: First, self diagnosis and self treatment postpone, if they do not actually preclude, proper medical attention; second, it is not the function of salesmen to give medical advice. There is the further danger of immediate harm resulting from unsupervised use of electrotherapeutic equipment, such as burns and shocks.

In view of the foregoing report, the Council on Physical Therapy voted not to include the Them-O-Ray Portable Short Wave Generator in its list of accepted devices.

PALM BEACH MERCURY ARC "COLD" ULTRAVIOLET RAY SUN LAMP NOT ACCEPTABLE

Manufacturer: Ultra-Violet Ray Laboratories, Inc., 206 East
Twenty-Third Street, New York.

The Palm Beach Sun Lamp, a mercury arc "cold" ultraviolet radiation source, has been advertised extensively to the general public. This has resulted in the Council's receiving a number of inquiries concerning the effectiveness of the unit as a sun lamp for home use. In keeping with its policy of investigating units which are before the public, the Council has prepared the following report on the Palm Beach Sun Lamp, which was not submitted for consideration by the manufacturer:

This lamp is available with two stands, either a table or a floor model. The latter is adjustable from 51 to 63 inches and the head can be tilted to any desired angle. The lamps are finished in bronze and ivory baked-on enamel with chrome plated trims. Accessories include an 8 foot extension cord, two pairs of goggles and a built-in automatic time switch.

The burner consists of a spirally wound quartz tube of about 8 mm. external diameter and about 90 cm. in length, mounted in the shallow flat-baked, chromium-plated reflector, which is about 25 cm. in diameter and 5 cm. in depth. It is operated on 110 volts, alternating current, 60 cycles, 100 watts. A graduated switch limits the exposures from one to fifteen minutes, cutting off the current automatically.

Radiometric and erythral tests were performed with the unit. When operated on 115 volts, the total intensity of wavelengths shorter than and including 3,132 angstroms, at a distance of 2 feet (61 cm.) from the front edge of the quartz burner, was 43.7 microwatts per square centimeter. A minimum perceptible erythema was produced on the inner forearm on exposure for sixteen minutes. This is in good agreement with the time of exposure calculated on the basis of the radiometric measurements. At a distance of 1 foot the time of exposure for a minimum perceptible erythema would be about one fourth of this value, or four minutes. The manufacturer recommends two minutes, at a distance of 1 foot, as a safe starting exposure.

Over 95 per cent of the total ultraviolet radiation emitted by a so-called "cold" quartz mercury burner is of wavelengths shorter than about 2,900 angstroms, wavelengths not present in sunlight. With the Palm Beach Sun lamp, over 90 per cent of the ultraviolet is concentrated in the resonance emission line at 2,537 angstroms. This emission line is dangerous because it is likely to cause conjunctivitis and may cause cataract if the exposure is too prolonged. Moreover, on first exposure it activates ergosterol, producing vitamin D; but if the exposure is too prolonged it destroys what it creates. Ultraviolet lamps that may be used with safety in the home emit wavelengths between 2,900 and 3,132 angstroms. These rays are very weak in the "cold" quartz type of lamp. Hence, in the opinion of the Council, such a source is misbranded if called a "sun lamp" and is apt to mislead the public. Instead of "sunlamp," such a device might well be called an "ultraviolet lamp" and the advertising matter should emphasize the fact that such a lamp emits rays of wavelengths injurious to the eyes.

One advertising pamphlet, "Palm Beach Sun Lamp For Home Use," apparently written for the attention of laymen, has been referred to the Council. It makes claims concerning the beneficial effect of ultraviolet radiation for "certain forms of anemia," "sinus infections," "respiratory ailments" and "brightening mentality." In addition, the copy points out that over 90 per cent of the emission is in the region of 2,540 angstroms. Photographs show that goggles are worn during treatments but the copy fails to emphasize the fact that these lamps emit rays which are definitely injurious to the eyes, when unprotected.

In the opinion of the Council, the Ultra-Violet Ray Laboratories is practicing methods that are detrimental to rational therapeutics. The distribution of advertising matter containing misleading claims constitutes an appeal to the public which is likely to be harmful, since it enhances a feeling of false security on the part of the layman.

In view of the foregoing report, the Council on Physical Therapy voted that the Palm Beach Mercury Arc Cold Ultraviolet Ray Sun Lamp is not acceptable as a sun lamp for home use without the supervision of an experienced physician.

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SATURDAY, MAY 14, 1938

PROPOSED NEW BUILDING FOR THE ARMY MEDICAL LIBRARY AND MUSEUM

A bill, for which the President has already indicated his approval, authorizing the Secretary of War to construct a building to replace the present Army Medical Library and Museum Building at a cost not to exceed \$3,750,000, was introduced April 28. The bill, if enacted, will provide enlarged facilities for the custody and use of the million or more volumes now in the library and for future expansion. This bill proposes the only possible solution for the present situation. The Army Medical Library, frequently referred to as the Surgeon General's Library, is in fact the library of the entire medical profession of the United States. It is identified with the Medical Department of the Army only because Surgeon General Lovell in 1836 conceived the idea of its organization and because through the interest and enterprise of successive surgeon generals it has been brought to its present magnitude and efficiency. It is the largest medical library in the world, containing nearly 500,000 books. If pamphlets, theses and other manuscripts are included, its total number of volumes is above a million. For many years it has been the mecca of American physicians who are seriously engaged in medical research, teaching and authorship.

Thousands who have never visited the library have obtained through its interlibrary loan system the use in their own homes of medical books that otherwise would have been inaccessible. Many more thousands who have never visited the library and possibly never even heard of its interlibrary loan system have been the beneficiaries of its resources, through the publication of books and of periodical literature made possible only because authors and publishers have been able to avail themselves of its facilities. The physicians of the country now have an opportunity of repaying in part at least the debt they owe the library and to secure for themselves and for the physicians who are to follow the benefits of an even greater library in the

future. If they rally promptly to the support of this bill, it should be possible to procure its enactment even in the brief time that will elapse before the present session of Congress adjourns and thus to save a year or more in planning and construction time.

Under the same roof as the Army Medical Library is the Army Medical Museum, established by the Medical Department of the Army in 1863 and now the largest museum of human pathology in the United States. The building in which both are housed, erected about fifty years ago, is a squat red-brick building, on an inconspicuous and somewhat inaccessible site, utterly incongruous when considered in connection with the magnificent public structures erected in the national capital during recent years. The continuous accumulation of books and periodicals, the enlarged demands for service arising out of the broadening fields of the science and art of medicine and the increase in the number of potential patrons that has resulted from the increase in the number of physicians have combined to make administration difficult. There is urgent need too for the better protection from fire and possibly other hazards of the invaluable collections of books, periodicals and pathologic specimens now housed or crowded into this old and outmoded building.

The pending bill leaves details of the construction of the proposed building to the judgment of the Secretary of War. In the selection of the site, however, the advice of the National Capital Park and Planning Commission is to be requested. This arrangement assures the construction of a building adequate to house the existing library and museum, to provide for future expansion and to meet the needs of physicians and other students of the science and art of medicine who desire to avail themselves of its facilities. It assures also the location of the building in proper relation to existing public buildings and others projected by the Planning Commission and at a point affording the greatest possible convenience to the patrons of the library and the museum. All in all, the enactment of the bill should create in Washington a truly great monument for American medicine.

In the Senate, this bill, S. 3919, was introduced by Senator Sheppard of Texas, chairman of the Committee on Military Affairs, and immediately referred to that committee. In the House of Representatives it was introduced as H. R. 10455 by Representative May of Kentucky, chairman of the House Committee on Military Affairs, to which committee it was immediately referred. Before it can become a law, it must be reported by these committees to the Senate and the House, respectively, and must then run the legislative gantlet. As the present session of Congress is now expected to adjourn at least as early as June, it is imperative that every effort be made to make clear to Congress the importance of this measure and the urgency of prompt and favorable action.

UNJUSTIFIED CLAIMS OF OSMOTHERAPY

New methods of administering remedies are frequently introduced and enthusiastically acclaimed without adequate evidence for their usefulness. While intravenous injection of hypertonic salt solutions increases the specific titer of antibodies, this augmentation of circulatory defenses is apparently accompanied by sufficient injury to the tissues to offset its therapeutic value. This conclusion, by Reploh¹ of the Hygienic Institute, Münster, presumably indicates the end of the commercial exploitation of "osmotherapy" in postwar Germany.

The possibility of increasing the bactericidal titer of the circulating blood by intravenous injection of hypertonic salt solutions was suggested as early as 1890. The term "osmotherapy," however, was not coined till 1922, when it was suggested by Stejskal.² At present numerous hypertonic salt solutions are sold in central Europe, the best known being Bertram's mixture of sodium acetate, sulfate, phosphate and chloride, plus a small amount of iodophenol. Extensive trials of this mixture have been made in veterinary medicine, with a few allegedly successful trials in human medicine. Hartwich and Schulze-Büntje,³ for example, have reported curative results in man particularly in infections with gram-positive cocci.

Reploh called attention to the fact that practically no crucial tests of therapeutic claims have been made on experimental animals although the products are widely exploited commercially. He therefore injected the recommended dose of 5 per cent of Bertram's salt mixture intravenously into normal rabbits and observed the changes in complement titer, opsonic index and bactericidal power for a period of three weeks. Following the intravenous injection of a single dose, irregular fluctuations in complement titer took place during the first thirty-six hours. After this there was a gradual and fairly uniform rise in complement content till the seventh day. The complement remained about 50 per cent above normal for at least three weeks. Almost identical curves were obtained in plotting the changes in opsonic index. There was also a distinct increase in bactericidal titer of the blood serum.

In spite of these demonstrable increases in serologic titer, however, the normal level of antimicrobial resistance was not appreciably raised. Rabbits or mice injected with lethal doses of trypanosomes, spirochetes, neurotropic herpes virus, pneumococci or streptococci, for example, showed no statistically decreased mortality on treatment with Bertram's salt mixture. The only suggestion of therapeutic value was drawn from a relatively small group of rabbits and mice injected intravenously with staphylococci. The seven untreated

control rabbits in this group all died after an average length of life of six days. Six of the nine treated rabbits died at about the same time, while three survived the infection. In mice the ten staphylococcus infected controls all died within five to seven days. Six of the seventeen treated mice survived. A skeptical immunologist would regard this as a "borderline" reaction, of little practical value. Control groups of rabbits and mice treated with a variety of quasispecific chemotherapeutic agents (e.g., arsphenamine) showed a much higher percentage of recovery.

"INDIGESTION" AND ADVERTISED
NOSTRUMS

The versatility of the quack is notorious; he commercializes epidemics and makes disease pay dividends through nostrums. In the department of THE JOURNAL devoted to the work of the Bureau of Investigation attention has been called repeatedly to the number of so-called stomach remedies that have been put on the market during the past few years: "Currier's Tablets," "Kolloyd," "Pfunder's Stomach Tablets," "Tums," "Udga," "Willard's Tablets." The cause of this flood has doubtless been the increased incidence of gastric conditions associated with the worry and mental depression of the period of economic stress through which the nation has passed and is passing.

These dangers have recently been reduced to clinical entities by A. B. Rivers of the Division of Medicine of the Mayo Clinic, who sketches¹ the results of a survey relative to the incidence of dyspepsia among a large number of patients presenting themselves for examination. Rivers and his associates report that "about half of the men forty years of age and older, who come to us primarily because of dyspepsia, are found to have peptic ulcer, cholecystic disease or carcinoma of the gastrointestinal or accessory gastrointestinal tract." Of women of the same age group they reported that two out of five "are found to be suffering from gallbladder disease, peptic ulcer or cancer of the stomach, pancreas or intestine." Every sixth man of the group was "found to have carcinoma of the stomach, pancreas or intestine."

Rivers rightly calls attention to the fact that "Almost any evening, during the height of the radio programs, it is possible to hear four or five smooth-tongued announcers advising rapid and inexpensive methods of curing gastrointestinal difficulties. Drugstore shelves are filled with attractively displayed means of curing indigestion. The highways are bordered by signs indicating how the passers-by can quickly return to the happy state wherein they can again enjoy their food. Magazines and newspapers daily carry thera-

1. Reploh, H.: *Ztschr. f. Immunitätsforsch.* 92: 151 (Feb.) 1938.

2. Stejskal, K.: *Grundlagen der Osmotherapie*, Berlin, 1922.

3. Hartwich, W., and Schulze-Büntje, P.: *Deutsche. med. Wchnschr.* 60: 930 (June 22) 1934.

1. Rivers, A. B.: The Dangers of Treating "Indigestion" by Advertised Nostrums, *Proc. Staff Meet., Mayo Clin.* 13: 87 (Feb. 9) 1938.

peutic advice regarding gastronomic disturbances for the benefit of their dyspeptic readers."

As Dr. Rivers says, there is a serious responsibility falling on the medical profession of "educating laymen concerning the dangers of heeding nonprofessional advice that they cure themselves of dyspeptic unhappiness, particularly if they have reached middle age." This responsibility, *THE JOURNAL* believes, the profession has not only realized but met. In season and out, week after week and year after year for a third of a century, organized medicine has reiterated the dangers of self drugging. But what shall be said of the responsibility of those newspaper and magazine publishers and those radio station owners—men who cannot be charged with lack of intelligence—who for a price are willing to implant in the minds of the sufferers from digestive disorders the belief that the only hope of escaping the operating table is to buy some so-called patent medicine which is advertised for "stomach ailments"?

RECENT RESEARCH ON SPEECH

The mechanism of speech has been studied recently with the aid of much improved mechanical equipment. The vocal organs have been photographed in monochrome and in color, motion pictures have been made of them in action, they have been observed through periscopes, they have been looked at directly, by reflection and stereoscopically, and they have been examined with the stroboscopic device. With one type of instrument, the larynx can be viewed by from thirty to fifty students at one time. Vivid pictures can be obtained of the vocal cords vibrating sometimes with a razor-like edge and at times with a rounded surface. They have been observed to move up and down and in and out, and one at a different rate from the other. In a review, Kerridge¹ points out that the carrying power of a voice does not seem to bear any relation to the type of respiration or to the vital capacity of the speaker's lungs. The volume of air breathed in and out during speech making has more phonetic significance than other respiratory factors. In experiments on students undergoing speech training, the volume of air was not usually increased by practice. There is, however, large individual variation in respiratory habit. It should especially interest teachers of speech and singing that recent extensive investigations apparently give no basis for training in respiratory habit. The demonstration that people with different respiratory habits speak equally well should save teachers unnecessary labor in trying to change an established habit.

Formerly it was taught that the pitch of the voice was raised when the thyroid cartilage moved downward on the cricoid; now, recent experiments by sev-

eral investigators indicate that an exactly opposite change occurs. Cowan,² in studying the speech of some American actors and actresses, found that the average median pitch level was 141 cycles per second for the male voices and 233 cycles for the female voices. The average pitch range used by them in speech was two octaves. The average standard deviation of syllabic power for all speeches was 5.9 decibels. The mean average rate of speech was 157 words per minute, although only a little more than 50 per cent of the time was taken for the actual speaking. The amount of change during an inflection averaged about two tones, and falling inflections occurred more commonly than rising or level intonations.

The quality of the sound produced can be altered by stimulation of the extrinsic laryngeal muscles. In the thyro-arytenoid muscle there are six fasciculi, all of which have fibers of different origin, different insertions and different actions. There is therefore ample arrangement for varying the extent of the vocal cord which is put under tension. This particular muscle is one of the most quickly acting muscles known. The chronaxia is given as one ten-thousandth of a second.

The older idea of schools of singing that air within the chest vibrates strongly during the use of the "chest register" has been discountenanced in scientific circles. Another tenet of schools of voice training which has been slowly disappearing is "the sounding board effect" of the palate and the teeth. Paget³ pointed out that a soprano would need a palate six feet square and teeth of equal length for any sound reflection to be possible. The actual dimensions of these parts are such that the fundamental tone cannot be affected or the direction of the voice influenced by palatal movement. It is not impossible, however, for the hard palate to influence some of the higher harmonics of short wave length. Voelker⁴ calculated that a hard palate of average size might affect the seventy-eighth overtone in the lowest male voice or the tenth overtone in the highest female voice.

In the recent study of speech there has been much equipment brought to bear on the subject—microphones, amplifiers, oscillographs, acoustic filters, sound films and phonograph records. These devices have thrown light on the complicated way in which speech is produced and on the elaborate pattern of the constantly changing vibration in the air which reaches the ear. As yet, however, little has even been surmised of the processes in the brain which initiate the actions of speech or of those essential to the appreciation of reception.

2. Cowan, M.: Pitch and Intensity Characteristics of Stage Speech. *Arch. Speech, Supp.*, 1936.

3. Paget, Sir Richard: *Human Speech*, London, Kegan Paul, 1930; *This English*, London, Kegan Paul, 1935.

4. Voelker, C. H.: The Function of the Epiglottis in Speech. *J. A. M. A.* 103:1797 (Dec. 8) 1934.

1. Kerridge, Phyllis M. Tookey: Recent Advances in Knowledge Concerning Hearing and Speech, *Physiol. Rev.* 18:59 (Jan.) 1938.

Current Comment

THE PREVENTION OF PARALYSIS IN POLIOMYELITIS

The seasonable outbreaks of infantile paralysis are not far distant. Last week a statement in the correspondence column of *THE JOURNAL* emphasized the necessity for complete rest for patients in the early stages of this disease. Complete rest is so important that it is usually far better to leave the child in bed at home when the disease is first suspected than to move the patient any appreciable distance to a hospital. When these patients are disturbed or moved as little as possible a majority in whom the disease has not progressed beyond the early stages escape paralysis entirely. Should the patient have paralysis, especially of the extremities, the affected part should be immobilized properly at the earliest moment. Early rest of a weakened muscle under these circumstances will help prevent permanent crippling. Infantile paralysis can be suspected when there is fever, headache, irritability, possibly vomiting, perhaps a tremor in the hands, and especially a tender rigid spine, which makes it impossible for the child to touch his chin to his knee. When such manifestations are present, the spinal fluid may be examined to confirm the diagnosis. Thus far there is no specific effective remedy in the acute stages of infantile paralysis nor any generally accepted preventive.

TYPHOID IN MINNEAPOLIS IN 1935

The epidemic of typhoid in Minneapolis beginning in the first half of May 1935 and lasting until the early part of August is the subject of a final report¹ just made available. From May 4 to August 10, 174 cases were recorded in Minneapolis, contrasting with an average of only twenty-six cases a year in Minneapolis for the five year period preceding 1935. The cases in general were mild in character and there were only six deaths. Eleven patients had received typhoid vaccine, but one of these had completed the immunization course only seven days before the first symptoms developed. The tracing of the source of the epidemic was a careful performance. Conservatively estimated there were about 2,000 typhoid carriers among Minneapolis residents. Possibly, then, there may have been more than twenty-one resident carriers along the watershed contributing typhoid pollution to the water. Furthermore, one case of typhoid was recorded seventeen days before the onset of symptoms in the first epidemic case. The former patient was a resident of an institution from which sewage is discharged into the Mississippi River about 118 miles up the river from Minneapolis. Typhoid bacilli were no doubt present in the polluted water at the point of entrance to the Minneapolis water intakes. The other possible sources of infection—contacts, milk, spring and well water,

1. Report of Investigations of the Typhoid Fever Epidemic, Minneapolis, 1935, by the Minnesota Department of Health.

flooded basements, ice supply and swimming places—also were investigated, but all except the Minneapolis city water supply were eliminated after thorough epidemiologic and laboratory investigations. Sanitary engineering review of the water supply system led to the conclusion that there is a considerable number of physical defects in the pumping stations, the purification plants, the distribution system and the plumbing systems, both public and private. These defects constitute potential hazards which, under certain circumstances, may permit contamination to enter the system. They are remediable, however, and recommendations aimed at their correction and improved administration are outlined in the report.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Hospital News.—The Goldsby King Memorial Hospital, Selma, announces the opening of a new addition which provides facilities for twenty patients. A wing of twenty-nine rooms to provide office accommodations for the staff of the Marcus Skinner Clinic has been added.

Personal.—Samuel R. Damon, Ph.D., formerly with Johns Hopkins University School of Medicine, Baltimore, has been placed in charge of the laboratories of the state department of health, succeeding James G. McAlpine, Ph.D., resigned.—Dr. George E. Newton was recently named health officer of Autauga County with headquarters in Prattville; he held a similar position in Lauderdale County, where he has been succeeded by Dr. Julius E. Dunn with headquarters in Florence. Dr. Dunn was formerly health officer of DeKalb County.—Dr. Oma E. Herndon has been appointed chief medical officer at the U. S. Veterans' Administration Facility, Tuscaloosa, succeeding Dr. Herbert Caldwell, who has been transferred to Ithaca, N. Y.—Dr. George M. Harms, Chatom, has been appointed health officer of Washington County, succeeding Dr. Charles M. Cole, resigned.

ARIZONA

Lectures on Obstetrics.—A series of lectures on obstetrics will be given in Prescott May 23-25, Flagstaff May 26-27, and Jerome May 28 under the auspices of the child and maternal welfare division of the state board of health in cooperation with the Arizona State Medical Association. Dr. Morris Edward Davis, associate professor of obstetrics and gynecology, School of Medicine, Division of Biological Sciences, University of Chicago, will be the lecturer. Physicians throughout the state may attend the courses, which are offered without charge. Similar courses were presented in Phoenix and Tucson.

DISTRICT OF COLUMBIA

Mr. Wiprud Appointed Executive Secretary.—Mr. Theodore Wiprud, since 1929 executive secretary of the Medical Society of Milwaukee County, Wis., has been appointed to a similar position with the Medical Society of the District of Columbia. This is the first time the district society has had an executive secretary.

Society News.—At a meeting of the Washington Medical and Surgical Society May 19, Hon. J. Hamilton Lewis, United States senator from Illinois, will discuss "The Federal Attitude Toward the Medical Economic Problem."—The Washington Ophthalmological Society was addressed April 18 by Drs. Derrick T. Vail Jr., Cincinnati, on "Opticohiasmatic Arachnoiditis"; John H. Dunnington, New York, "Tension in Intra-Ocular Neoplasms," and Harry S. Gradle, Chicago, "Practical Application of Contact Glasses: Demonstration and End Results of Fifteen Years."

ILLINOIS

Tuberculosis Meeting.—The Illinois Tuberculosis Association held its annual meeting at the Illinois Hotel, Bloomington, April 18-19. The speakers included:

- Dr. Hugh A. Beam, Moline, The Tuberculosis Problem in State Institutions.
- Dr. Frederick M. F. Meixner, Peoria, Rehabilitation Programs in England.
- Dr. Henry C. Sweany, Chicago, Silicotuberculosis.
- Dr. Robinson Bosworth, East St. Louis, Legal Regulations Governing Sanatorium Boards.
- Dr. Leon C. Ives, Peoria, Activation of Chronic Pulmonary Disease by Industrial Accident.
- Dr. David O. N. Lindberg, Decatur, Importance of Early Diagnosis of Tuberculosis Among Industrial Workers.
- Dr. Roswell T. Pettit, Ottawa, Medicolegal Aspects of Pulmonary Diseases in Industry.

Chicago

Lecture on Tissue Metabolism.—Dr. W. Fleischmann, docent of physiology and assistant professor, Physiologic Institute of Vienna, will lecture at the Cook County Graduate School of Medicine May 18 on "Principles of Tissue Metabolism."

Health Courses in the Public Schools.—Courses to emphasize the importance of health will be added to public school curriculums, the newspapers report. The new courses will in the beginning be added to the program of about fifty of the 349 elementary schools. In the primary grades, regular teachers will provide training in personal cleanliness and give instruction in health habits. In the intermediate grades various causes of disease will be explained to the pupils. In the seventh and eighth grades they will receive instruction from the physical education teacher.

Course in Gastrointestinal Diseases.—The stomach study group at Michael Reese Hospital will conduct a course on gastrointestinal diseases May 23-June 4. The principal subjects considered will be: ulcers, carcinoma of the stomach, diseases of the colon, the gallbladder and liver, and carcinoma of the colon and rectum. Lectures on the roentgenology, gastroscopy, radiotherapy and pathology of the gastrointestinal tract will be presented. The course is open only to graduate physicians and the tuition fee is \$100; the enrolment fee of \$10 will be applied toward the tuition fee. Further information may be obtained from the Medical Librarian, Michael Reese Hospital, Twenty-Ninth Street and Ellis Avenue.

INDIANA

Semiannual District Meeting.—The fifty-ninth semiannual meeting of the Eleventh Indiana Councilor District Medical Association will be held at Logansport May 18. A golf tournament will be held in the morning and in the afternoon the following will speak:

- Dr. Ross C. Ottinger, Indianapolis, Pitfalls in the Diagnosis of Acute Abdominal Conditions.
- Dr. Gerald F. Kempf, Indianapolis, Uses and Abuses of Sulfanilamide.
- Dr. Stephen D. Malouf, Peru, Acute Perforations of the Gastrointestinal Tract.

Rolla N. Harger, Ph.D., professor of biochemistry and toxicology, Indiana University School of Medicine, Indianapolis, will speak at the banquet.

IOWA

Management of Pneumonia.—A film on "Management of the Pneumonias" was a feature of meetings in Council Bluffs, Creston, Davenport, Ottumwa, Centerville, Washington, Burlington, Mason City and Waterloo, February 28-March 5. The film was edited by Dr. Jesse G. M. Bullock, New York, and shown by Dr. Florian E. Schmidt, Chicago. The pneumonia control measures of the state department of health, with particular reference to diagnostic antipneumococcic serum, were discussed. This serum is supplied to more than a hundred hospitals and laboratories of the state.

KANSAS

Society News.—Dr. Carl O. Rice, Minneapolis, discussed "Injection Treatment of Hernia" before the Wyandotte County Medical Society April 19.—The Southeast Kansas Medical Society was addressed in Fredonia March 7; the speakers included Drs. Sherwin E. Mella and James H. Danglade, both of Kansas City, Mo., on syphilis; Dr. Fred P. Helm, Topeka, secretary, state board of health, showed a film entitled "Public Health Aspects of Syphilis."—A symposium on tuberculosis was presented before the Central Kansas Medical Society in Ellsworth March 24 by Drs. Charles F. Taylor, Norton; Frank E. Coffey, Hays, and Samuel H. Snider, Kansas City, Mo.—Dr. James R. Elliott, Kansas City, Mo., discussed

"Treatment of Arthritis" before the Labette County Medical Society in Parsons March 23.—At a meeting of the Miami County Medical Society in Paola March 9 the speakers included Dr. Norman Reider, Topeka, on headaches.—The Shawnee County Medical Society was addressed in Topeka April 4 by Drs. Noble E. Melencamp, Dodge City, on "Acute Perforation of Peptic Ulcer"; Ray A. West, Wichita, "Postpartum Care of the Cervix with Special Reference to Carcinoma Prophylaxis," and John M. Porter, Concordia, "Diagnostic Errors in the Field of Internal Medicine."

KENTUCKY

Annual Course in Pediatrics.—A series of lectures on diseases of children was begun April 27 under the auspices of the pediatric department of the University of Louisville School of Medicine to be given on Wednesdays for ten weeks at the Children's Free Hospital. There will be three lectures each day and one hour's discussion of cases in the hospital. The instructors are Drs. Philip F. Barbour, James W. Bruce, Lee Palmer, William W. Nicholson, James H. Pritchett, Jacob J. Glaboff, Harry S. Andrews, Aaron A. Shapero, Annie S. Veech and Margaret A. Limper. Similar courses have been given for several years under the chairmanship of Dr. Barbour.

LOUISIANA

Medical Reserve Course.—Tulane University of Louisiana School of Medicine, New Orleans, conducted an inactive duty course of instruction for medical reserve officers of the fourth corps area of the U. S. Army and Navy May 9-13. Enrolment was open to all reserve officers of the medical departments of the army and navy and the medical officers of the National Guard. Dr. Hiram W. Kostmayer was in charge of the course.

District Meetings.—The Fourth District Medical Society was addressed in Shreveport March 1 by Drs. Merritt B. Whitten, Dallas, Texas, on "Myocardial Infarction" and Edward N. Cook, Rochester, Minn., "Transurethral Prostatic Resection."—At a meeting of the Seventh District Medical Society in Crowley, March 10, Drs. George R. Herrmann, Galveston, Texas, spoke on "Present Status of Hypertensive Arterial Disease," and Dean H. Echols, New Orleans, "Trigeminal Neuralgia."

MASSACHUSETTS

Warren Triennial Prize Awarded.—Dr. Henry K. U. Beecher, anesthetist at the Massachusetts General Hospital, Boston, won the Warren Triennial Prize of \$500 recently for an essay on "The Physiology of Anesthesia." Twelve essays were submitted in competition from persons in various parts of the United States, England and Germany. The award, established in 1867 by the late Dr. J. Mason Warren in memory of his father, is presented every three years through the executive committee of the Massachusetts General Hospital.

Session on Health Education.—The twelfth annual conference of the New England Health Education Association will be held in Cambridge June 4-5. The speakers will be Mr. Homer N. Calver, director of health exhibits, 1939 New York World's Fair, and secretary and director, committee on American Museum of Hygiene of the American Public Health Association, on "The American Museum of Hygiene and the Health Exhibit of the 1939 New York World's Fair," and Miss Ruth Evans, assistant supervisor of health and physical education, public schools, Springfield, Mass., on "Building a Health Curriculum in Springfield Schools." At luncheon, Mr. Payson Smith, Graduate School of Education, Harvard University, will discuss "Health Phases of Recent Studies and Surveys in Education."

MINNESOTA

The Bell Lecture on Tuberculosis.—Dr. Arnold R. Rich, associate professor of pathology, Johns Hopkins University School of Medicine, delivered the John W. Bell Lecture on tuberculosis before the Hennepin County Medical Society, Minneapolis, April 14. His subject was "The Influence of Age Determined Factors on the Development of Tuberculosis." The lecture was established by the Hennepin County Tuberculosis Society in honor of the late Dr. John W. Bell.

Society News.—The seventh annual joint meeting of the Wabasha and Winona county medical societies was addressed at the Buena Vista Sanatorium, Wabasha, recently by Drs. James M. Hayes, Minneapolis, on "Acute Abdominal Conditions"; Thomas J. Kinsella, Minneapolis, "Diagnosis and Treatment of Primary Carcinoma of the Lung," and George L. Loomis, Winona, "Intractable Nasal Hemorrhage with Report

of a Case Requiring Ligation of the External Carotid Artery."—The Minnesota Pathological Society was addressed April 19 by Drs. Cecil J. Watson on "Idiopathic Porphyria with Cirrhosis of the Liver" and Elexious T. Bell, "Clinical and Pathologic Study of 180 Cases of Subacute and Chronic Glomerulonephritis." Both are from Minneapolis.

Annual Hospital Meeting.—The fifteenth annual convention of the Minnesota Hospital Association and allied organizations will be held at the Nicollet Hotel May 19-21. The speakers will include:

Dr. Malcolm T. MacEachern, Chicago, Organization for the Care of the Sick.

Dr. Bert W. Caldwell, Chicago, The Hospital's Place in the Community.

Dr. Robin C. Buerki, Madison, Wis., The Education of Hospital Administrators.

Other groups meeting at this time include the Minnesota Record Librarians Association, Minnesota Association of Nurse Anesthetists, Minnesota Society of Medical Technologists, Minnesota Dietetic Association, Minnesota district of the American Association of Medical Social Workers, Minnesota Occupational Therapists Association, Minnesota Association of Hospital, Medical and Institution Librarians.

Dr. Litzenberg Becomes Emeritus Professor.—Dr. Jennings C. Litzenberg, professor of obstetrics and gynecology, University of Minnesota Medical School, Minneapolis, will retire July 1 with the title emeritus, and will be succeeded by Dr. John L. McKelvey, associate professor of obstetrics and gynecology, Peiping Union Medical College, Peiping, China. Dr. Litzenberg graduated at the University of Minnesota Medical School in 1899, joining its faculty in 1901 as instructor in obstetrics. He became head of the department in 1914. He was chairman of the Section on Obstetrics, Gynecology and Abdominal Surgery of the American Medical Association in 1928 and has been president of the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, Hennepin County Medical Society and the Minnesota Academy of Medicine.

MISSISSIPPI

Society News.—A symposium on tuberculosis was presented before the Clarksdale and Six Counties Medical Society in Clarksdale March 23 by Drs. William D. Hickerson, Sanatorium, Harvey F. Garrison, Felix J. Underwood, Jackson, Henry Boswell and James D. Biles Jr., Sanatorium. In the evening following the banquet Drs. John S. Harter and Duane M. Carr discussed "Surgical Treatment of Tuberculosis."—At a meeting of the Tri-County Medical Society in Wesson March 15, Dr. Richard S. Savage, Brookhaven, discussed "Automobile Injuries—Fender and Bumper"; Lew Wallace, Laurel, executive secretary, state pharmacy board, "Cooperation of Druggists and Doctors" and Dr. William C. Chaney, Memphis, "Diseases of the Thyroid Gland."

NEW JERSEY

Society News.—Drs. George A. Poland, Pleasantville, William J. Carrington, Louis Feinstein and Robert A. Kilduffe, Atlantic City, addressed the Cumberland County Medical Society at its bimonthly meeting in Vineland recently on various phases of gynecology.—Dr. Justin Charles Washburn, New York, addressed the Hudson County Medical Society, Jersey City, April 5, on "Differential Diagnosis of Pruritus."—Dr. Alexander Marble, Boston, addressed the Bergen County Medical Society, Hackensack, April 12 on "Newer Methods in the Treatment of Diabetes."—The Tuberculosis Sanatorium Conference of Metropolitan New York held a meeting at Roosevelt Hospital, Metuchen, May 2 with Dr. Arvid Lindau, Lund, Sweden, as the speaker on "The Role of Bovine Tuberculosis in Man."

NEW MEXICO

Society News.—Drs. Henry T. Safford Jr. and Louis W. Breck, El Paso, Texas, addressed the Grant County Medical Society, Silver City, recently, on "Anal Fistula" and "Fractures of the Forearm and Lower Part of the Leg" respectively.

Lectures on Obstetrics at Roswell and Carlsbad.—Dr. Morris Edward Davis, associate professor of obstetrics and gynecology, School of Medicine, Division of Biological Sciences, University of Chicago, will give two courses in obstetrics for practicing physicians, the first at Roswell May 16-18 and the second at Carlsbad May 19-21. The lectures are sponsored by the medical societies of Chaves and Eddy counties and by the division of maternal and child health of the state department of public health.

NEW YORK

Ban on Parrots.—A sanitary code regulation prohibiting importation, breeding or sale of birds of the psittacine or parrot family will go into effect June 1, the state health commissioner recently announced. A similar regulation will go into effect in New York City July 1.

Outbreak of Septic Sore Throat.—An outbreak of septic sore throat affecting fifty-nine persons in Minetto and vicinity, Oswego County, was traced to the use of raw milk from one dealer who supplied 90 per cent of the milk for the village. A milker who gave a history of a recent attack of sore throat and two cows with mastitis were found on a dairy farm that supplied part of this dealer's milk. The outbreak subsided after pasteurization was begun.

Society News.—The Onondaga County Medical Society held a dinner April 30 for physicians and lawyers in honor of George H. Bond, past president of the New York State Bar Association, and Dr. William A. Groat, Syracuse, president-elect of the Medical Society of the State of New York. At the society's meeting May 3 Dr. William F. Snow, New York, spoke on "Modern Treatment of Syphilis and Gonorrhea" and Dr. William A. Brumfield Jr., Albany, on "Clinical Aspects of Syphilis."—At a meeting of the Syracuse Academy of Medicine May 17 the speakers will be Drs. Eugene Davidoff, on "Present Status of Benzedrine Sulfate Therapy"; Robert J. Mearin, "Insulin Therapy in Dementia Praecox" and Philip H. Rakov, "Treatment of Varicose Veins and Varicose Ulcer."

New York City

Eighth Harvey Lecture.—Dr. Harry Goldblatt, professor of experimental pathology, Western Reserve University School of Medicine, Cleveland, will deliver the eighth Harvey Lecture at the New York Academy of Medicine May 19 on "Experimental Hypertension Induced by Renal Ischemia."

Welch Lectures at Mount Sinai.—Dr. Walter B. Cannon, George Higginson professor of physiology, Harvard University Medical School, will deliver the William H. Welch Lectures at Mount Sinai Hospital May 18 and 20 on "Some New Aspects of Homeostasis" and "The Aging of Homeostatic Mechanisms."

Hospital News.—Dr. George Gray Ward has retired as chief surgeon of the Woman's Hospital after twenty years' service. Dr. Albert H. Aldridge has been appointed to succeed him.—Mr. George Blumenthal, for twenty-seven years president of Mount Sinai Hospital, has retired, it was announced at a dinner in honor of Mr. Blumenthal's eightieth birthday April 7. A plaque acknowledging his services to the hospital will be placed in the main foyer of the building.—Broad Street Hospital, founded in 1917 in the financial district, has filed a petition in bankruptcy, the New York Times reported April 9.—Dr. George White Pickering, London, England, gave two lectures at Mount Sinai Hospital April 27 and 29 on "High Blood Pressure in Man" and "Headache."

Personal.—Dr. Henry Hall Forbes was honored at a testimonial dinner on the tenth anniversary of the New York Bronchoscopic Club. A silver loving cup was presented to Dr. Forbes, who was a founder and early president of the club. Speakers at the dinner were Drs. John M. Lore, president of the club; Westley M. Hunt, first secretary; Chevalier Jackson, Philadelphia; Gordon Berry, Worcester, Mass., and Charles J. Imperatori.—The American Jewish Physicians Committee, an organization for the purpose of building and maintaining the medical department of the Hebrew University in Palestine, gave a dinner April 28 at the Hotel Commodore in honor of Mr. Phelps H. Adams, author of "The Truth About Palestine."—Dr. Louise Doddridge Larimore recently received an award of \$50 from the Woman's Hospital, Philadelphia, in recognition of her invention of a special microscope to be used in diagnosis of cancer. The award was from the Hannah W. Richardson Fund, which provides awards for medical inventions by staff physicians who also are graduates of the Woman's Medical College of Pennsylvania. Dr. Larimore is a former member of the hospital staff and graduated from the woman's college in 1915.—Robert R. Williams, chemical director of the Bell Telephone Laboratories, received the Gibbs Medal of the Chicago Section of the American Chemical Society at a meeting in Chicago April 29.—Frederic S. Lee, Ph.D., professor of physiology, Columbia University College of Physicians and Surgeons, will retire at the end of the present academic year. Dr. Lee is 78 years old and has been teaching at Columbia since 1891. He is a past president of the American Physiological Society, the Society for Experimental Biology and the Harvey Society.

NORTH DAKOTA

State Medical Meeting at Bismarck May 16.—The fifty-first annual convention of the North Dakota State Medical Association will be held at the World War Memorial Building, Bismarck, May 16-18, under the presidency of Dr. Edwin L. Goss, Carrington. The guest speakers will be:

Dr. Frederic W. Schlutz, Chicago, *Prevalence of Deficiency Diseases; a clinic on infant feeding.*

Dr. Bernard Fantus, Chicago, *Some Useful Prescriptions.*

Dr. Ernest Sachs, St. Louis, *Head Injuries.*

Dr. William F. Mengert, Iowa City, *Puerperal Sepsis; Analysis of Obstetrical Cases.*

Dr. Raymond W. McNealy, Chicago, *Diagnosis of Acute Abdominal Conditions; Management of Blood Vessel Injuries and Their Sequelae.*

Dr. Albert M. Snell, Rochester, Minn., *Diagnosis and Treatment of Cholelithiasis; Recent Studies on Obstructive Jaundice.*

The North Dakota Academy of Ophthalmology and Otolaryngology will hold a special assembly Tuesday afternoon at which Dr. Sachs will speak on "Ocular, Otolological and Rhinological Symptoms of Brain Tumors" and Dr. Frederick A. Figi, Rochester, Minn., on "Tumors of the Larynx."

OHIO

Society News.—Dr. Louis E. Prickman, Rochester, Minn., addressed the Summit County Medical Society, Akron, April 5, on "Allergy in General Medicine."—Dr. Allen O. Whipple, New York, addressed the Academy of Medicine of Cleveland, April 15, on "Surgery of the Spleen."—At a meeting of the Clark County Medical Society in Springfield March 10 Dr. Nial L. Burrell presented "Review of 100 Cases of Granular Urethritis in Women."—Dr. Florian E. Schmidt, Chicago, addressed the Tuscarawas County Medical Society, New Philadelphia, March 24 on "Diagnosis and Treatment of Pneumonia."—Drs. Malcolm O. Cook, Harry M. Lowell and Flavius E. Ullrey, Hamilton, discussed "Cholelithiasis and Cholecystitis" at a meeting of the Butler County Medical Society, Hamilton, March 10.—Dr. Delmas K. Kitchen, Detroit, addressed the Ashtabula County Medical Society, Ashtabula, March 8 on "Advances in Endocrine Research and Therapy."—Dr. Robert C. Kirk, Columbus, addressed the Pickaway County Medical Society, Circleville, March 11, on serum treatment of pneumonia.

PENNSYLVANIA

Graduate Assembly.—The Harrisburg Academy of Medicine presented its fifth annual graduate assembly May 4 with the following speakers:

Dr. Charles Bagley Jr., Baltimore, *Emergency Treatment of Injuries to the Skull and Vertebral Column.*

Dr. Samuel M. Peck, New York, *Purpura and Hemorrhagic Conditions: The Value of Snake Venom in Treatment.*

Dr. B. B. Vincent Lyon, Philadelphia, *Diagnosis and Management of Peptic Ulcer.*

Dr. Stanley R. Woodruff, Jersey City, N. J., *Treatment of Urinary Infections.*

Dr. Frank J. Heck, Rochester, Minn., *Treatment of the Anemias.*

Dr. Henry C. Marble, Boston, *Traumatic Surgery: Treatment of Injuries to Hand and Forearm.*

Philadelphia

Gerhard Medal Awarded.—Dr. Warren H. Lewis and Margaret Reed Lewis, A.B., Baltimore, received the William Wood Gerhard gold medal of the Pathological Society of Philadelphia at a meeting April 14. Dr. and Mrs. Lewis delivered the annual conversational lectures of the society on "Cultural and Cytological Characteristics of Normal and Malignant Cells."

Society to Aid Persons with Diabetes.—A group of Philadelphia women has formed the Philadelphia Diabetic Society. A four point program has been adopted. The society will make *insulin* available within the means of all who require it; it will help unfortunate persons to raise funds for artificial limbs, crutches and appliances and will help provide camps for diabetic children. It will help diabetic persons in good condition to find employment and finally will seek to educate both the victims of the disease and the public how to recognize early symptoms and the importance of adequate early medical care. A board of physicians to advise the society has been organized and is as follows: Drs. John W. Bransfield, George M. Dorrance, Lewis K. Ferguson, Sigmund S. Greenbaum, Chevalier L. Jackson, Baldwin L. Keyes, Wilmer Krusen, Louis B. La Place, James L. McCabe, Patrick A. McCarthy, Hubley R. Owen, Anthony Sindoni Jr., Edmund B. Spaeth, Samuel Dale Spotts, William G. Turnbull, George Harlan Wells and Carroll S. Wright. Mrs. C. Fred Rau is president of the executive board of the society.

RHODE ISLAND

Personal.—Dr. Jay Perkins, Providence, has retired as president of the Providence Tuberculosis League and was elected president emeritus. He has been especially interested in tuberculosis work since 1894.

Society News.—Dr. Howard R. Ives Jr., Providence, and J. Howard Brown, Ph.D., Baltimore, addressed the Providence Medical Association March 7 on "Bacteriology of Clean Abdominal Wounds" and "Significance of Double Zone Beta-Hemolytic Streptococci for the Cow and for Man" respectively.

SOUTH CAROLINA

Society News.—At a meeting of the Chester County Medical Society, Chester, April 1, the speakers were Drs. John M. Settle, Great Falls, William J. Henry and John N. Gaston Jr., Chester, all of whom discussed acute arthritis.—Dr. Robert E. Seibels, Columbia, addressed the Medical Society of South Carolina, Charleston, recently on "The Toxemias of Pregnancy."—Dr. Fred W. Rankin, Lexington, Ky., addressed the Columbia Medical Society April 11 on "Modern Management of Malignancy of the Colon and Rectum" and Dr. Allen Izard Josey, Columbia, on "Sickle Cell Anemia." Dr. John H. Musser, New Orleans, addressed the society March 14 on "The Doctor's Disease—Coronary Occlusion" and Dr. James R. Allison, Columbia, on "Granulomas of the Skin."

SOUTH DAKOTA

Society News.—Dr. Edward B. Tophy, Rochester, Minn., discussed anesthesia before the Third District Medical Society at Brookings recently.—The Aberdeen District Medical Society was recently addressed, among others, by Dr. Geoffrey I. W. Cottam, Sioux Falls, on common diseases of the chest.

New Indian Sanatorium at Rapid City.—The Sioux Sanatorium, a \$272,000 government institution for the Sioux Indians, was recently completed at Rapid City. The site, chosen in 1935 by a special board of commissioned officers of the U. S. Public Health Service, was that of a former Indian school. The new building is three stories high, with 150 rooms and space for 114 beds. The nurses' home was remodeled from the old boys' dormitory. Dr. Arthur Joseph Wheeler, superintendent of the Albuquerque Indian Sanatorium, Albuquerque, N. M., has been appointed superintendent.

VIRGINIA

Personal.—Dr. John B. H. Bonner, formerly of Stony Creek, health officer of Sussex County, has been transferred to Prince George County with headquarters at Hopewell. Dr. Francis J. Clements, formerly of Palmyra, has been appointed to succeed Dr. Bonner.

Society News.—Dr. James W. Tankard, Pennington Gap, addressed the Lee County Medical Society in Pennington Gap, recently, on Meckel's diverticulum.—Dr. James Edwin Wood Jr., Charlottesville, addressed the Lynchburg Academy of Medicine March 8 on "Body Weight and Hypertension."—At a meeting of the Richmond Academy of Medicine March 8 the speakers were Drs. Walter L. Nalls, on "Chronic Cystic Disease of the Lungs"; Charles M. Nelson, "The Cause of Chills Following Intravenous Therapy" and Joseph Bear, "Human Sterility."—Drs. Thomas N. Spessard and Roy M. Hoover, among others, addressed the Roanoke Academy of Medicine in March on "Hysteria" and "Colles' Fracture" respectively.—Among speakers at a quarterly meeting of the Southside Virginia Medical Association in Franklin March 15 were Drs. Thomas F. Wheeldon on "A Threefold Method of Fixation of Fractures"; William B. Porter, "Hyperthyroidism in the Negro," and Harry Hudnall Ware Jr., "Treatment of Eclampsia." All are of Richmond.—Dr. Marion B. Sulzberger, New York, addressed the Norfolk County Medical Society March 21 on "Management of Common Dermatoses by the General Practitioners."

WASHINGTON

Surgical Meeting.—The annual meeting of the Spokane Surgical Society was held April 30 at the Davenport Hotel, with Dr. Harry E. Mock, Chicago, as the guest speaker. Dr. Mock spoke in the afternoon on "Appendicitis and Lesions of the Biliary Tract" and at the banquet on "Head Injuries."

PUERTO RICO

Society News.—Dr. Hugh H. Young, Baltimore, addressed the Puerto Rico Medical Association January 28 on prostatic conditions. Dr. Ernest E. Irons, Chicago, addressed the San Juan County Medical Association February 21 on "Drugs and the Protection of the Profession and the Public."

GENERAL

New Head of the Red Cross.—Norman H. Davis, ambassador at large and adviser to the State Department on European Affairs, was appointed by President Roosevelt April 12 as chairman of the American Red Cross to succeed the late Dr. Cary T. Grayson. Mr. Davis will continue his diplomatic career, the President said.

Meeting on Epilepsy.—The American League Against Epilepsy will hold a joint scientific session with the section on convulsive disorders of the American Psychiatric Association June 6 in San Francisco at the Fairmont Hotel. The League will also have a dinner meeting at the Fairmont June 7. Dr. Temple S. Fay, Philadelphia, is president and Dr. Frederic A. Gibbs, Boston, secretary.

Grants Available for Research.—The Committee on Scientific Research of the American Medical Association invites applications for grants of money to aid in research on problems bearing more or less directly on clinical medicine. Preference is given to requests for moderate amounts to meet specific needs. For application forms and further information, please address the committee at 535 North Dearborn Street, Chicago.

Northwestern Alumni Meeting in San Francisco.—Medical alumni of Northwestern University will hold a reunion at a luncheon Wednesday June 15 during the meeting of the American Medical Association. The luncheon will be at 12 o'clock at the Hotel Whitcomb, 1231 Market Street, with Dr. James G. Carr, Chicago, as the speaker. Drs. Frederick J. Carlson, 371 Thirtieth Street, and Claire Rasor, 1624 Franklin Street, both of Oakland, are in charge of arrangements.

Society News.—Alpha Epsilon Delta, honorary premedical fraternity, held its annual meeting at the University of North Carolina, Chapel Hill, March 24-26. Among other events were addresses by Drs. Addison G. Brenizer, Charlotte, N. C., on "Surgical Anatomy of the Thyroid Gland and Thyroidectomy" and William de B. MacNider, dean of the University of North Carolina School of Medicine, on "The Biologically-Minded Physician." Maurice L. Moore, Ph.D., Drexel Hill, Pa., is grand secretary of the fraternity.—Dr. Oliver H. Perry Pepper, Philadelphia, was chosen president-elect of the American College of Physicians at the annual meeting in New York April 4-8 and Dr. William J. Kerr, San Francisco, was installed as president. The following were elected vice presidents: Drs. James B. Herrick, Chicago; Noble Wiley Jones, Portland, Ore., and Charles T. Stone, Galveston. The 1939 meeting will be held in New Orleans.—The annual meeting of the American Rheumatism Association will be held in San Francisco at the University of California Hospital June 13.

Post-Convention Cruise to Alaska.—The California Medical Association has arranged to charter a steamer for a post-convention cruise to Alaska June 17 to July 1 after the Annual Session of the American Medical Association in San Francisco June 13-17. The party will leave San Francisco Friday June 17 by train, stopping at Portland, Ore., for a sightseeing trip that includes the city, Columbia River and Bonneville Dam. Then it arrives in Seattle early Sunday June 19 and by steamer to Victoria for a tour of that city. The Canadian Pacific steamer *Princess Alice* sails for Alaska Sunday evening. The rate from San Francisco and return to San Francisco is \$240 and up, depending on the type of accommodations. For persons who hold tickets to return on the Canadian Pacific Railroad by way of Lake Louise and Banff, the rate from San Francisco back to Vancouver will be \$181. Those interested should make reservations at once by sending a deposit of \$50 per person. If the necessary number of persons is not secured by May 20 the deposit will be returned at once. Make checks payable to Earle J. Harris, 95 Market Street, San Francisco, who is in charge of the tour. Dr. Junius B. Harris, 450 Sutter Street, San Francisco, is chairman of arrangements.

LATIN AMERICA

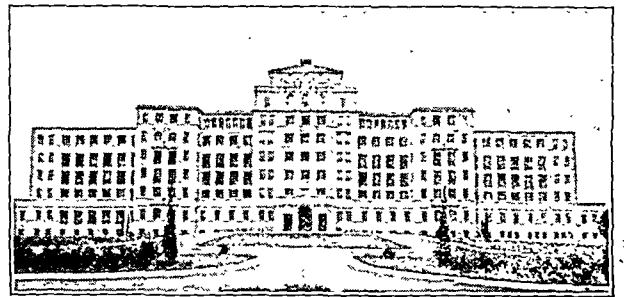
National Institute of Health Opened in Peru.—A new National Institute of Hygiene and Public Health in Lima, Peru, was officially opened by the president of the republic February 12, according to a report to the U. S. Department of Commerce. The institute, created by a government decree July 23, 1937, will be under the supervision of the ministry of public health, labor and social welfare. Dr. Telemaco Battistini will be the director. It will have three departments: bacteriology and immunology, entomology and experimental medicine. The department of bacteriology and immunology, which will be directed by Dr. Battistini, will engage in the manufacture of serums, vaccines and glandular extracts, which will be sold to government controlled hospitals, municipalities

and certain other public agencies at cost. The department of entomology, under the direction of Marshall Hertig, Ph.D., formerly of Harvard Medical School, Boston, will for the present work exclusively on Carrion's disease, or "verrugas," which is endemic in certain areas of Peru, notably in Verrugas, about 99 kilometers from Lima. Later it is expected that research will be instituted on malaria, which causes the greatest morbidity of any disease in Peru. The department of experimental medicine, which will be directed by Dr. Alberto Hurtado, professor of medicine in San Marcos University, will cooperate with the department of entomology in its study of Carrion's disease. The new institute is equipped with modern apparatus, including air conditioning. Stables have been provided and the institute now has twenty-four immunized horses.

Government Services

New Station Hospital at Fort Sam Houston

A new seven story station hospital for the Eighth Corps Area, U. S. Army, was opened at Fort Sam Houston, Texas, in February. The building is of modified Spanish design and has a capacity of 418 beds. On the first floor are the executive and administrative offices, the medical library, the staff conference and board rooms, the kitchen and dining rooms; in the wings are the urologic ward, the outpatient service, the eye, ear, nose and throat clinic, the dental clinic and the pharmacy. The officers' and women's wards, the laboratories and the offices of the chiefs of medical and surgical services are on the second floor. The third and fourth floors are mainly surgical, with the air-conditioned operating section in the rear



New U. S. Army Hospital at Fort Sam Houston.

wing of the third; the rear wing of the fourth is occupied by the x-ray department, equipped for long and short wave therapy. General medical cases are cared for on the fifth floor, which has a special air-conditioned ward of ten beds for allergic patients. The sixth floor has wards for eye, ear, nose and throat and for obstetric patients and the seventh is reserved for tuberculosis patients. The pediatric clinic and the physical therapy section are in the basement, which also contains most of the nonprofessional services of the hospital. A sub-basement houses the heating plant and other service machinery.

Dr. McCoy Accepts Post at Louisiana University

Dr. George W. McCoy, medical director, U. S. Public Health Service, Washington, D. C., has been appointed head of the department of preventive medicine at the Louisiana State University School of Medicine, New Orleans, effective in September. He will retain his status as an active member of the public health service and will carry on his epidemiologic studies of leprosy as it prevails in certain of the gulf coast states and elsewhere, if necessary. A native of Cumberland Valley, Pa., Dr. McCoy is 61 years of age and a graduate of the University of Pennsylvania School of Medicine, class of 1898. He was appointed assistant surgeon of the Public Health and Marine Hospital Service in 1905 and in 1913 surgeon in the public health service. He was named medical director July 1, 1930. Dr. McCoy was in charge of the U. S. Plague Laboratory, San Francisco, from 1908 to 1911, director of the U. S. Leprosy Station, 1911-1915, serving during this period also as sanitary adviser to the Hawaiian government. From 1915 to 1937 he was director of the National Institute of Health, formerly known as the Hygienic Institute. He was president of the Washington Academy of Sciences in 1935. He is a member of the Council on Pharmacy and Chemistry of the American Medical Association.

Foreign Letters

LONDON

(From Our Regular Correspondent)

April 16, 1938.

Epidemics in Schools

Seven years ago the Medical Research Council appointed a committee to investigate epidemics in boarding schools, and the report has just appeared. The number of children from 10 to 19 years of age concerned in the investigation was 22,166 boys and 7,600 girls. The main object was to study the incidence with a view to better control and to see how far the lessons learned from herds of animals could be applied to man. Nasopharyngeal infection was common; the average number of boys attacked during a term was 17.4 per cent. Influenza, which is included in this group, caused 43 per cent of the loss of school time. The disease did not seem to confer any lasting immunity. Those who had it one year seemed to be more likely to succumb to a subsequent epidemic. Of infectious diseases 90 per cent of all cases among boys occurred in the first two calendar terms. The epidemics of the various infectious diseases differed in their ability to work themselves out before the end of the term. Whereas about half the outbreaks of measles came to a natural conclusion, no epidemics of German measles and only a small proportion of mumps, varicella and scarlet fever outbreaks finished before the holidays began. As about 70 per cent of the boys had measles and varicella before entering school, the difference between these two epidemics has no obvious explanation.

Otitis media, pneumonia and rheumatism showed striking differences of incidence as between the sexes, boys suffering twice as frequently as girls from otitis media, two and one-half times as frequently from pneumonia and eleven times as frequently from acute rheumatism. This difference may be partly due to stricter supervision of such cases in their early and uncertain symptoms among girls. The one serious illness from which girls suffered more severely than boys was appendicitis. Girls reported approximately 50 per cent more cases and about 10 per cent more operations. There was no evidence that removal of the appendix had any effect on subsequent sickness rates.

REMOVAL OF TONSILS

About half of the boys and rather under half of the girls had had their tonsils removed, and a yearly census in the school showed an increase by 6 per cent in the former and 7 per cent in the latter. Though recognizing the value of the operation in carefully selected cases, the committee gravely doubted "whether the majority of the tonsillectomies performed today are the result of true discrimination rather than of routine ritual." Actually the incidence of coughs, colds and sore throats in those with and without their tonsils did not differ.

Protection in Air Raids

The government has issued further instructions to local authorities on protection in air raids. One of the most urgent is the recruitment and training of personnel for the duties of air wardens, first aid parties and decontamination squads. A survey of hospital accommodation is being made in cooperation with health officers. It is held that in the event of an air raid the wisest policy is the dispersion of the population to their own homes, but in the neighborhood of crowded thoroughfares public shelters will be necessary. Evacuation of towns and cities may be adopted. The government will provide equipment for ambulance work, first aid posts and clearing hospitals. The public is urged to increase the natural protection of their own homes by the measures which the government has advised and which can be carried out at little cost. These include the sealing of doors and windows against

poison gas by paste and paper. The same situation applies to business premises where a large amount of accommodation can be made available and where adaptation and strengthening of the use of sandbags will give protection.

Great Britain is more advanced than any country in the world in the provision of gas masks. In an emergency the whole population could be supplied within eight hours and the arrangements even include a protective device for babies which totally encloses the child. If properly put on the respirator will protect eyes, nose, mouth and lungs and by means of the filters supply pure air for breathing in the presence of any gas known to be used in warfare. The masks will not be issued to individuals beforehand, because special storage conditions are necessary. They will be in the custody of every local authority, which will be responsible for obtaining particulars as to numbers and sizes and for their ultimate distribution. They will be kept in "local respirator stores," which in large towns will accommodate as many as 30,000. The local authorities are required to furnish particulars of the number of men, women and children between the ages of 4 and 16 years, between 2 and 4 and under 2 years. On obtaining this information they will make arrangements for the supply of the corresponding sizes to the local stores. As the value of the respirator depends to a large extent on its fit, it will be necessary to ascertain by actual fitting the correct number of each size required. This will require a house to house census by the air wardens. Trials have demonstrated that the maximum number of respirators which can be satisfactorily dealt with by one distributing depot is 4,000, which means that each store will require seven or eight depots. The air wardens employed on the census must have undergone antigas training. They will record on cards particulars for forty dwellings and use separate cards for each street. Periodically, say every three months, they will revisit and note on the cards any changes.

Precautions Against the Pollution of Water Supplies

The recent outbreak of typhoid in Croyden, a populous district on the outskirts of London, affected 310 persons of whom forty-three died. It aroused such an outcry that the government appointed a commission of inquiry, which reported that the outbreak was due to infection of a chalk well with the typhoid bacillus. The inquiry revealed that work had been done on the well just before the outbreak and that while ample lavatory accommodation was provided at the surface for the workmen, there was opportunity for relief in a long dark gallery where water was flowing. Moreover, one of the workmen was found to be a typhoid carrier and the conclusion was that he was the source of the outbreak. Recommendations were made for safeguarding the water supply of Croyden in the future. Regulations have been made which are more stringent than any previously adopted in this country. Persons engaged in work with wells, reservoirs or mains or on work which might bring them into contact with a water supply will be required to give their complete medical history and to undergo a blood test. If positive results are obtained, a detailed examination will be made. No person who has suffered from typhoid, paratyphoid or dysentery may be so engaged until proved by bacteriologic investigation to be free from infection, and every six months those who have been sick must have further bacteriologic and medical examination. Every workman must report sickness in his family. Every person working in a well or reservoir must wear suitable protective clothing and use boots exclusively kept for the work and disinfected as required. No water must be pumped into the supply from any well while work is in progress there, nor must water be returned to the supply until it has been pumped away for a suitable period and its purity confirmed by analysis. If it is not possible to shut down the well during the work precautions must be taken for the effective treatment for water going into the supply.

PARIS

(From Our Regular Correspondent)

April 16, 1938.

Pulmonary Embolism Without Arterial Occlusion

At the March 11 meeting of the Société médicale des hôpitaux five necropsies were reported by Drs. Ameuille, Fauvet and Monsaingeon in which pulmonary embolisms, three following operation, one a delivery and one a phlebitis, were observed. Two of these cases appear to confirm previous experimental work by other investigators in showing that actual obstruction of a pulmonary artery is not necessary to have the well known clinical picture of pulmonary embolism. In all five of the cases, such a diagnosis had been made. The technic employed at necropsy was to inject the pulmonary artery with a gelatin solution colored with carmine, according to the formula of Rondeau du Noyer. In cases of embolism the noninjected area is seen in the form of a cone, the embolus being easily found at the summit of the cone. When this technic is correctly applied, every permeable vessel is completely injected up to its precapillary portion. Even on microscopic examination the gelatin serves to identify the arteries and enables one to determine whether the particular section is proximal or distal to the obstruction. In two cases, the authors failed to find an embolism. One patient died twelve days after a hysterectomy and the other the same length of time after a delivery. If an embolism existed, it must have been capillary rather than arterial. In the three other cases an embolus was found but microscopic examination of the blocked area showed that the pulmonary parenchyma was the seat of an intense edema with rupture of the alveolar septums. A marked exudation of polymorphonuclear leukocytes was noted in the edematous areas. The authors found that even in the most severe forms of pulmonary embolism the arterial obliteration plays a relatively unimportant part, which they believe is an argument in favor of the "nervous" or "shock" theory as maintained by French investigators.

At the March 25 meeting of the same society, Drs. Villaret, Justin-Besançon and Bardin, who have studied pulmonary embolism experimentally, stated that there appear to be two opinions on the etiology of this dreaded complication. According to one group a neurovegetative shock is responsible, whereas the other group, basing their opinion on necropsies, believe that there is a mechanical obstruction or occlusion of a pulmonary artery.

Pulmonary embolism presents one of three clinical pictures. In the first, the interval between the appearance of the symptoms and death varies from immediate to several days. In a second type the signs are purely local and recovery may ensue. In the third, the condition may be a latent one because only minute branches are involved.

Cases like those reported by Ameuille, in which no obstruction was found, constitute a new chapter. It becomes necessary to divide cases, all of which present the familiar clinical picture of pulmonary embolism, into those with and those without demonstrable obstruction. The syncope, anxiety, acute edema and cardiovascular collapse seen in both of these are of neurovegetative origin and are observed in conditions other than pulmonary embolism such as angina pectoris.

Cyanosis After Use of Sulfanilamide-like Preparation

At the March 11 meeting of the Société médicale des hôpitaux a case was reported by Drs. Soulié and Moret in which an alarming degree of cyanosis followed the administration, for an acute otitis, of di (p-acetylaminophenyl) sulfone. Slight cyanosis is very common but a severe degree such as they observed is infrequent. The patient was a boy, aged 15, who presented symptoms, following an attack of influenza, of bilateral otitis media necessitating paracentesis. A total of seventeen tablets, each containing 0.5 Gm. ($7\frac{1}{2}$ grains) was given

over an interval of four days. After the ingestion of four tablets, the first day, a marked cyanosis of the lips, nose, nails and skin was noted by the parents, who continued however to give the drug. During the following forty-eight hours additional symptoms in the form of severe retrobulbar pain, palpitation, dyspnea and fatigue appeared. On the fourth day the cyanosis was generalized and extreme. Spectroscopic examination of the blood revealed the presence of methemoglobin but there were no accompanying alterations of the red cells and leukocyte formulas. The cyanosis gradually lessened following cessation of the use of the drug. The case emphasizes the necessity of daily surveillance of all patients who are given these newer preparations, especially when employed to combat acute infections.

Chronic Nephritis, Hyperparathyroidism and Skeletal Changes

An unusual association of chronic nephritis, hyperparathyroidism and skeletal bone changes was the subject of a paper read at the March 11 meeting of the Société médicale des hôpitaux of Paris by Prof. Paul Carnot and Dr. Abel Lafitte. A woman aged 67 when first seen by them in 1937 had had a marked albuminuria and high blood urea content seven years before. This evidence of chronic nephritis had improved, following diet and rest, to such an extent that the patient was able to resume work. In July 1936 she experienced severe pain in the dorsolumbar region of the spine and a recurrence of the albuminuria and high blood urea. Tuberculosis of the spine was suspected but only a moderate osteoporosis of the vertebrae was found. The albuminuria in September 1936 rose to 15 Gm. per liter and the blood urea to 300 mg. per hundred cubic centimeters. On admission to the service of Professor Carnot she had a marked asthenia and pallor, 65 per cent hemoglobin and 2,640,000 red cells. The white cell count was about normal. The blood pressure was 160 systolic, 80 diastolic. No signs of uremia were present. X-ray examination revealed an advanced decalcification involving the dorsal and lumbar vertebrae, pelvis, ribs and clavicles. There was a slight diminution of the alkali reserve of the blood and a moderate hypercalcemia. The phosphorus content of the blood was normal but there was a hyperproteinemia and hypercholesterinemia. Death in April 1937 was preceded by bronchopneumonia. At necropsy, advanced renal sclerosis was found and a large left parathyroid, which on histologic study revealed a diffuse adenoma. The right parathyroid was found in the parenchyma of the thyroid and was normal. The ribs, pelvis and spine showed an advanced degree of decalcification. The osteomalacia was associated with osteoporosis of a fibrocystic type. The skeletal changes appeared to be in an intermediate stage between those of an osteoporosis and those of a von Recklinghausen disease.

The relation between nephritis and skeletal changes has been reported in the literature with the usual explanation that an acidosis of renal origin was directly responsible for the osteoporosis. These osteopathies of renal origin appear to differ from those observed in hyperparathyroidism. In the former there is usually a hypocalcemia and in the latter a hypercalcemia. The presence of an adenoma of the parathyroid probably explains the osteomalacia in this case, but the relations between skeletal changes, chronic nephritis and hyperparathyroidism are complex and relatively few reports of this triple relation have appeared.

Hemorrhagic Ulceriform Cancer of the Stomach

At the March 11 meeting of the Société médicale des hôpitaux a case was reported by three of Professor Gosset's co-workers, Drs. Guttmann, Charrier and Bertrand, illustrating the early diagnosis of cancer in a type of gastric ulcer to which the term "cancer ulcéiforme" is applied at Dr. Gosset's clinic. The cancer ulcéiforme is a primary gastric cancer which has the

anatomic, radiologic and symptomatic characteristics of a chronic benign gastric ulcer. A man aged 50, whose first symptoms were a severe hematemesis and melena in June 1936 was found a month later by radiography to have a niche on the lesser curvature, 3 cm. from the pylorus, which was diagnosed as a benign gastric ulcer. A second radiographic examination, seven months later, showed a persistence of the niche surrounded by changes which Dr. Guttman has termed "aspect encastré"; i. e., with sharply demarcated edges. The patient's general condition appeared so good that no operative procedure was deemed indicated. A second severe hematemesis however took place in June 1937, and films taken three months later not only showed persistence of the niche but a rigid condition of the edges of the ulcer. The patient was seen for the first time in September 1937 by Dr. Guttman and a diagnosis made of ulceriform cancer. He advised operation after two months of medical management had shown no radiographic changes in the ulcer. At operation by Dr. Charrier, an ulceriform lesion the size of a dime (18 mm.) was found, histologic examination of which by Dr. Bertrand confirmed the diagnosis of a primary ulceriform cancer. At the International Gastroenterologic Congress held in the fall of 1937 at Paris, attention was called by Dr. Guttman to the slow evolution of the radiologic signs in such cases as compared with the mild character or even complete absence of all clinical symptoms. One should be cautious in terming an ulcer cured because of the recession of clinical symptoms.

BERLIN

(From Our Regular Correspondent)

March 21, 1938.

The Sleeping Habits of Twins

In the summer of 1936 a camp for twins, the first of its kind, was established on the Baltic coast. Dr. Horst Geyer of the Kaiser-Wilhelm Institute of Anthropology, Berlin-Dahlem, director of the camp, has reported his observations of his charges in *Forschungen und Fortschritte*. He considers the sleeping habits of twins worthy of special study: Is it possible, by means of usual methods of research on twins, to observe hereditary traits manifested while the consciousness is more or less obliterated by sleep? It was expected that a study of this problem would shed light also on certain especially conditioned psychic functions manifested during consciousness. The experiments were based on recent observations of the function of certain portions of the cerebral axis.

At the camp there were twenty-six female pairs of twins, one half of them enzygotic, ranging in age from 6 to 14 years. These children were observed nightly every two hours from 10 p. m. to 6 a. m. by investigators who went about the sleeping quarters. It is a principle of research on twins that comparative studies of enzygotic and dizygotic twins can provide indications of the degree of hereditary conditionality only if the traits investigated present, in general, variations among the population as a whole. However, few accurate studies have been made of divergent behavior during normal sleep. Geyer's observations at the camp established that great individual variations exist in the regulation of tonus during sleep. The author divided the sleeping children into two groups: the tonus-stable group, which maintained a more or less constant tonus, whether increased or diminished, throughout sleep and the tonus-labile group, which presented obvious fluctuations in tonus. These tonic variations were shown to be completely conditioned by heredity, although they may to a certain extent be modified by environmental influences. Further observations of the sensorimotor behavior during sleep lead to the differentiation of two types of slumber: cortical sleep and axial sleep. If the cerebral cortex is dormant and the cerebral axis in a state of relative wakefulness, namely, when consciousness is plainly obliterated and dreams are absent, the subject will usually manifest rhythmic oscillatory movements. The opposite type of sleep,

axial sleep, inhibits physical movement of the sleeper so that the relative wakefulness of the cerebral cortex is manifested in somniloquence, dreams and so on. The author's experiments revealed an unequivocal hereditary conditionality. The same principles appeared to govern behavior such as somnambulism, nocturnal enuresis and gnashing of teeth.

All investigated phenomena of sleep, in which the cerebral axis takes part (tonus during sleep, position assumed, redness of the cheeks, cortical and axial sleep, respectively) were found, as the author had anticipated, to be strongly conditioned by heredity. Psychic influences were also observed to be present in some measure.

The awakening is astonishingly similar, even to minute details, in a pair of enzygotic twins, whereas, conversely, dizygotic twins exhibit a lack of correspondence in this regard. Some of the children, for example, would awake abruptly with a start, whereas in others awakening was characterized by a period of somnolence. But the hereditary relationship of these different patterns of awakening was easily demonstrable.

The Sickness Insurance Clubs

The steadily mounting number of employed persons had as its corollary further important additions to the membership of the compulsory sickness insurance clubs during 1937. According to figures just released by the national bureau of statistics the number of members in such organizations averaged 20.3 million for the year (not included in this report were the so-called supplementary clubs, to which belong a large number of clerical employees in intermediate positions and so on). The foregoing figure represents an increase of 0.9 million members as against 1936 and an increase of 3.3 million members as against 1933. The income paid into these clubs has increased at a greater rate than the membership, chiefly as the result of the average increase in wages. Premiums exacted by the sickness insurance clubs remain in the same proportion to wages. The aggregate income of the clubs amounted to 1,438 million marks, 9.2 per cent more than in 1936. Reckoned per individual member the total income is estimated to have risen 5 per cent, the income from contributions 5.1 per cent.

Chiefly because of the influenza epidemic at the beginning of 1937, the claims for benefits from these societies was greater than in 1936. Altogether 9.10 million persons incapacitated by illness received benefits from the clubs (exclusive of the supplementary clubs, as mentioned); per hundred members, 41.7 were sick enough to claim disability in 1937 as against 41 per cent in 1936. Administrative expenses have increased at a greater rate than expenditures for claims. In particular, there has been an increase in cash benefits (disability allowances and so on during sickness) and this may be attributed to the widespread increase in wages. Aggregate disbursements of the clubs amounted to 1,419 million marks, namely, an 8.5 per cent increase over the 1936 figure (the increase in disbursement is thus somewhat less than the increase in income). The disbursement per member increased from 67.17 marks to 70.13 marks.

According to this report the excess of the clubs' income over expenditure was around 18 million marks in 1937 as against 9 million marks in 1936.

The Army Ration

The chief of army commissariat recently submitted to the national ministry of war a general report on the nutrition of German troops. Because of the strain of military life, the soldier's food must be of even higher nutritive value than that of the heavy laborer. Whereas the average nutritional requirement of the German civil population in 1936 and 1937 was estimated at 3,159 calories a day, that of the soldier in peacetime was reckoned at 3,880 calories and that of the soldier in the field at 4,258 calories. The war time ration of the civil population, based on that of the war year 1917, was estimated at

1,932 calories; the average consumption in the years preceding the war was 3,190. To improve the entire commissariat, experimental kitchens have been established in each military district. These kitchens will serve as centers of special instruction for commissaries and army cooks. The military authorities are particularly desirous that the troops should be rationed according to a carefully planned economy of food-stuffs. If experience has shown that the men reject certain types of food, these should be omitted from the rations, but exceptions must be made of foods which in the interest of national economy should form part of the fare and to which the men should accustom themselves.

Whereas the civil population has to a certain extent substituted other foods for bread, in the army commissariat bread still occupies its old position. Now, as before, the soldier's bread is a black bread from highly milled flour. With respect both to nutritional value and to palatability, it is recognized as superior to all other breads. The daily potato ration per soldier is from 1,000 to 1,500 Gm. A too heavy meat diet is avoided and generous quantities of fish are served. The men are also habituated to diets rich in vegetables. All in all, the army is accounted the greatest consumer of foodstuffs in Germany.

BUDAPEST

(From Our Regular Correspondent)

March 26, 1938.

Proposed Law to Control Venereal Disease

Prof. Eduard Neuber has proposed the enactment of a law which would provide means to check the ravages of venereal disease in Hungary. At a recent meeting of the Hungarian upper house, he said that there is every reason to take the strongest measures against venereal disease. Our statistics do not show the whole truth, because only those patients figure in the statistics who present themselves voluntarily for treatment. In the future methods must be put in effect which will search out all venereal patients. Systematic examinations must be introduced in the high schools, universities and the army, especially at the time of admission, because only a wide search for cases can eliminate the foci of infection. The more important principles of the law he proposes are as follows: The law shall contain regulations extending to all phases of the campaign against venereal diseases. It shall determine the type of cases compelled to be treated. The law shall provide punishment for infecting another person. It shall contain provisions for the protection of marriage and the family, and a program for the development of the health of the race. It shall describe the obligations of physicians with regard to the campaign against venereal disease. It shall prescribe punishment for neglecting to be treated. It shall deal with raising the age limit for the protection of girls, and with other moral and health protection questions of preventive character. The campaign shall be carried on by the department of public health and social welfare. In recent years, with the help of the ministry of the interior, thirty venereal dispensaries have been established and seventy more are needed in order that the law may be made effective.

A Review of Seven Hundred Takata Reactions

At a recent meeting of the Budapest Interhospital Association, Dr. B. Both reported on a study of 700 Takata reactions. A positive reaction was obtained in sixteen of nineteen cases of hepatic cirrhosis. In cases of hepatitis caused by arsphenamine and syphilis the reaction was strongly positive in nine of twenty-two cases and weakly positive in three cases. Among twelve cases of acute nephritis only four reactions were strongly positive, while in the cases of chronic nephritis Both always obtained negative or slightly positive reactions. In circulatory disturbances the reaction was positive in 8.7 per cent of the cases. In a miscellaneous group of maladies the reaction was positive only exceptionally. In his opinion, in reporting a positive

reaction, one should take into account not only the number of tubes showing a precipitate but also the quantity of the precipitate. He illustrated the changes taking place in the precipitates in the form of a curve and exhibited several curves which proved that the Takata reaction is helpful in the differentiation of diseases of the biliary ducts from those of the parenchyma of the liver.

Enlarged Tonsils in Prematurely Born Children

Dr. Brander made studies of 373 prematurely born children who are now from 7 to 15 years old. He studied the size of the tonsils and the pharynx and made intelligence tests according to the method of Binet-Simon-Terman. The results of his analyses indicated that the greater the degree of hypertrophy of the tonsils, the more evident was weakmindedness. He thinks it is probable that hypertrophy of the tonsils and the lack of intelligence had a common cause in the premature birth of these children. In the cases of simple hyperplasia, removal of the tonsils of school children may bring about improvement, but in the cases of weak mindedness it cannot.

AUSTRALIA

(From Our Regular Correspondent)

March 15, 1938.

Public Health in the Fiji Islands

The Fijian colony has an area of about 7,000 square miles and consists of many islands of volcanic origin in the South Pacific Ocean, with Sydney almost 2,000 miles away and Auckland at a distance of over 1,000 miles. Yet it has an excellent public health administrative authority with an enthusiastic medical staff and a central medical school at Suva. Medical practitioners are being trained at this medical school in Fiji and the neighboring island groups, and already two volumes of the "Native Medical Practitioners" have been published, a medical journal which contained in the issue for January 1937 twenty papers on local diseases.

CENTRAL MEDICAL SCHOOL

The Central Medical School has a director of clinical studies—Dr. T. Clunie. The principal of the school is Dr. W. Hoodless, with Dr. C. M. McPherson as pathologist to the government. The objective is to train selected students as native medical practitioners. Students are attracted from the Gilbert and Ellice islands, Cook islands, Loaga and Western Samoa, where each of these administrations is patiently building up a native medical practitioner service at the average rate of one qualified man per annum in each island. The medical authorities intend to provide also postgraduate courses. Already there are three postgraduates attending these classes, and forty medical students have been registered at the medical school. Proper physical training is organized, the importance of which for the native students cannot be overemphasized. Their hours of duty are long, and they are constantly in association with all kinds of diseases; in Suva they are unable to indulge in the regular swimming exercises to which they are accustomed in their respective island homes. Vacations are arranged to fit in where possible with the exigencies of students traveling to and from places like the South Sea islands. Thus a true endeavor is made to inculcate the spirit of friendly relations and assistance between the islands of the Pacific.

PUBLIC HEALTH ADMINISTRATION

In a population of 202,000, made up of 100,000 Fijians, 85,900 East Indians, 5,000 Europeans, 3,800 half-castes, 2,500 Rotumans, 2,000 Polynesians, 1,500 Chinese and 1,400 "others," the registered births totaled 7,330, a ratio of 15.3 per thousand with an infant mortality of 95.1 per thousand births. The Sisters in charge of the obstetric ward of the Colonial War Memorial Hospital are doing excellent work in maternity and child welfare work. There is a successful antepartum clinic in connec-

tion with the hospital, which is largely used by the Indian community. At the instigation of the Rockefeller Foundation authorities, bore-hole latrines were installed and have proved successful in Fiji, but periodic inspection is essential to their maintenance. A beginning has been made toward routine inspection of both houses and water supplies in the Suva and Rewa sanitary districts. Town planning and building regulations are receiving consideration, and an improvement is gradually appearing in the types of buildings erected. Inspection of meat, other foodstuffs and dairies is being instituted, but there is a serious deficiency in qualified sanitary inspectors. Routine medical inspection of incoming vessels is made. A careful watch is maintained for anopheles mosquitoes—a matter of vital importance to Fiji, which is, as yet, a nonmalarial country. None of the rats caught in the port and municipal areas of Suva showed any evidence of plague infection. Hospitals are established at Suva, Lautoka, Lambasa and Levuka, with some provincial hospitals, in all of which a large number of both inpatients and outpatients are treated. Native medical practitioners are in charge of the dispensaries, where about 37,000 patients were treated in 1935. There were 109 cases of typhoid reported in 1935, all of which were proved bacteriologically to be *Eberthella typhi* infections. Mass TAB inoculation of the population is being carried out. Dysentery also was prevalent. The hookworm campaign inaugurated by the Rockefeller Foundation in 1922 has been taken over by the Suva medical department; 5,897 patients were treated with carbon tetrachloride and tetrachlorethylene. It has been stated that the infection has been reduced by half since the commencement of the campaign. Patients with leprosy are segregated at the Leper hospital on the island of Makongi, where the total leper population is now 575. A new building is being erected to enable the laboratories to cope with all essential routine pathologic and bacteriologic work of the islands.

Medical Examination of Recruits

Attention has been drawn to the importance to the community of the problem of medical examination of recruits for military service by Major-General R. M. Downes, director of military medical services in the commonwealth. General Downes discussed several problems of the medical examination. It was decided that x-ray examination of the chest was desirable but would probably be impracticable, that varicocele and undescended testis should not be regarded as great disabilities, and that, while no general rule could be laid down, cardiac efficiency tests often gave an indication of early unfitness. Dealing with defects of the feet it was stated that, while men with flat feet might be quite efficient in civil life and in the performance of sport and athletics generally, they broke down when they had to do much marching or standing, as they would have to do under active service conditions.

Almoner Services in Australia

Australia is gradually developing an almoner service in conjunction with the extension of hospitalization. It is the duty of these almoners to act as liaison officers between the ex-patient at home and the doctor in the hospital. Their chief function is to see that the medical treatment is carried out. In 1929 an institute of hospital almoners was formed in Victoria. As a result of the education carried out under its auspices, trained almoners have been sent from Victoria to other states of the commonwealth. Recently an institute of almoners has been formed in New South Wales. The objects of the institute are to select and train suitable candidates for the work of hospital almoners, to keep a register of trained almoners, and to extend and develop the work of their members. Candidates to be trained for the vocation must be 19 years of age before they begin their course, and no certificate is awarded to students under the age of 22. The course of study comprises a two years course of training in social work with a school of social study recognized by the institute as providing a suitable course. In addition, one year's

training in hospitals is carried out under the direction of experienced almoners. Trainees also attend lectures on the social implications of disease and tutorial classes in the principles and practice of hospital social work.

NETHERLANDS

(From Our Regular Correspondent)

March 12, 1938.

The National Food Supply in War Time

The minister of agriculture has recently created an official bureau the function of which shall be to study the nation's war-time food supply. By the creation of this bureau, which resulted from a report submitted to the ministerial council by the Preparation for Economic Defense Commission, the conservation of the food supply and the methods of rationing are united under a single administration. The chief duty of this bureau shall be to plan for national use of the food supply in case of mobilization, danger of war and international tension. It was plainly demonstrated during the war years 1914-1918 that the lack of well organized food administration invariably led to a shortage of necessities. Because of diverse economic factors, the supply of essential foodstuffs is now much more adequate than in the prewar years. Since the relief centers, established to combat the depression, are most of them well supplied with necessities, they would become of great importance to the program of an emergency food administration.

Tercentenary of Clinical Instruction at the University of Leyden

Apropos of the tercentenary of the establishment in 1637 of the academy of clinical instruction at the University of Leyden, one recalls that this was the center from which, inspired by Boerhaave, numerous medical scholars set out to establish similar centers at Vienna (van Swieten and Albrecht von Haller), Edinburgh (Rutherford), Pavia, Prague and Rome.

As to the first instruction at the patient's bedside, although certain controversial authors place it in Italy around 1600, the method seems to have originated at either Leyden or Utrecht. In any event, certain it is that after several unsuccessful attempts by Jan van Heurne at Leyden, his son Otto obtained from the university's trustees in 1663 permission to have placed at Otto's disposal "a clinic of twelve beds and a dissection room for cadavers" wherein he might conduct practical lessons twice each week.

Boerhaave and Schacht made the Leyden clinic renowned throughout Europe. Subsequently the clinic underwent a certain deterioration but recently it has once more become a great clinical and laboratory center and is called Boerhaave Center in honor of the great master's memory.

Marriages

THOMAS CAMPBELL GOODWIN, Baltimore, to Dr. MARY STEWART HOOKE of New York, February 1.

WILLIS CADWALADER GERHART, Bala-Cynwyd, Pa., to Miss Eliza Morton of Devon, Pa., February 12.

WILLIAM HAYNE FOLK, Spartanburg, S. C., to Miss Alice Ruth Reeves of Union in February.

PHILIP I. BURACK, New York, to Miss Jessie Wachenheim of New Rochelle, N. Y., February 10.

ROBERT J. MEARIN, Syracuse, N. Y., to Miss Beatrice Bany of New York in December 1937.

RICHARD B. NICHOLLS, Norfolk, Va., to Dr. H. AURELIA GILL of Greensboro, N. C., April 1.

PAUL A. HARPER to Miss Cornelia Esther Edwards, both of Bridgeport, Conn., April 29.

IRVIN S. MILLER, Colton, Calif., to Miss Catherine Harrison at Frederick, Md., recently.

JULES D. GORDON to Miss Cynthia Hymanson, both of New York, April 24.

Deaths

Edward Martin ☉ Media, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1883; emeritus professor of surgical physiology at his alma mater; professor of clinical surgery, 1903-1910, and John Rhea Barton professor of surgery, 1910-1918; at one time clinical professor of surgery at the Woman's Medical College of Pennsylvania; member of the American Surgical Association, Society of Clinical Surgery and the American Association of Genito-Urinary Surgeons; past president of the Clinical Congress of Surgeons of North America; one of the founders, and for many years a member of the board of regents of the American College of Surgeons; president, and for many years vice president and member of the board of education; formerly commissioner of health of Pennsylvania; director of public health and charities, 1903-1905; veteran of the Spanish-American and World wars; surgeon to the University and Howard hospitals; consulting surgeon to the Bryn Mawr (Pa.) Hospital, Norristown (Pa.) State Hospital and the Wernersville (Pa.) Hospital; since 1895 member of the board of managers of the Swarthmore (Pa.) College; received honorary degrees from the University of Pennsylvania, Swarthmore College and Temple University; aged 78; died, March 17, in the University Hospital, Philadelphia, of carcinoma of the nose and meningitis.

Frederic Jay Cotton ☉ Boston; Harvard University Medical School, Boston, 1894; member of the American Surgical Association and the New England Surgical Society; assistant in surgery at his alma mater, 1902-1904; lecturer on surgery, 1914-1916; associate in surgery, 1916-1919 and instructor in industrial surgery, 1921-1922; formerly lecturer and associate in surgery at the graduate school; assistant professor of surgery at Tufts College Medical School, 1906-1910; veteran of the Spanish-American and World wars; at one time consultant in surgery in the U. S. Public Health Service; a founder and fellow of the American College of Surgeons; consulting surgeon to the Boston City Hospital, Faulkner Hospital, Beth Israel Hospital and the New England Hospital for Women and Children, Boston, Symmes Arlington Hospital, Arlington, Chelsea Memorial Hospital, Chelsea, Quincy (Mass.) City Hospital and Cape Cod Hospital, Hyannis, Mass.; author of the well known book "Dislocations and Joint Fractures"; aged 68; died, April 14, of heart disease.

Thomas James Orbison, Los Angeles; University of Pennsylvania Department of Medicine, Philadelphia, 1898; member of the California Medical Association; past president of the Los Angeles Society of Mental and Nervous Diseases and the Southern California Academy of Criminology; fellow of the American College of Physicians; at one time a practitioner in Philadelphia; was assistant instructor of mental and nervous diseases at his alma mater; formerly on the staffs of the Polyclinic Hospital and Orthopedic Hospital, Philadelphia; formerly professor of applied therapeutics, University of California Medical School; veteran of the Spanish-American and World wars; on the staffs of the Los Angeles County and Children's hospitals; awarded Baltic Cross and Latvian Jubilee Medal; aged 71; died, March 26, in Sawtelle, Calif.

James Wright Putnam ☉ Buffalo; University of Buffalo School of Medicine, 1882; professor of neurology, emeritus, at his alma mater; member and past president of the American Neurological Association; foreign corresponding member of the Société de Neurologie de Paris; formerly consulting neuropsychiatrist to the U. S. Public Health Service and consultant to the Providence Retreat; neurologist to the Buffalo City, General and the United States Marine hospitals; trustee to the Buffalo Seminary; aged 77; died, March 23, of coronary thrombosis.

Isidor P. Strittmatter ☉ Philadelphia; Jefferson Medical College of Philadelphia, 1881; past president of the Philadelphia County Medical Society; in 1923 established the Strittmatter Award to be given to the physician presenting to the Philadelphia County Medical Society the most valuable contribution to the healing art in any given year; it was awarded for the first time in 1933; on the courtesy staff of St. Mary's Hospital; aged 77; died, April 14, of valvular heart disease and diabetes mellitus.

Ralph Cleaves Wiggin, Brookline, Mass.; Boston University School of Medicine, 1900; professor of genito-urinary surgery at his alma mater; member of the American Urological Association; served during the World War; fellow of the American College of Surgeons; formerly surgeon-in-chief to the Massachusetts Memorial Hospitals; consulting urologist to the Westboro (Mass.) State Hospital; aged 60; died, March 6, in the Captain John Adams Hospital at Soldiers' Home, Chelsea.

Henri Phillip Linsz ☉ Wheeling, W. Va.; Jefferson Medical College of Philadelphia, 1894; an Affiliate Fellow of the American Medical Association; fellow of the American College of Surgeons; member of the House of Delegates of the American Medical Association in 1918, and from 1920 to 1930; past president of the West Virginia State Medical Association; for many years a member of the board of education; on the staffs of the Ohio Valley General and Wheeling hospitals; aged 68; died, March 13, of pulmonary edema.

Willard D. Haines ☉ Cincinnati; Medical College of Ohio, Cincinnati, 1884; member of the House of Delegates of the American Medical Association, 1921-1924; member and past president of the Western Surgical Association; fellow of the American College of Surgeons; professor emeritus of clinical surgery at the University of Cincinnati College of Medicine; on the staffs of the Good Samaritan, Christian R. Holmes and Cincinnati General hospitals; aged 75; died, April 21, of cerebral hemorrhage.

William Stone Jordan, Fayetteville, N. C.; University of North Carolina School of Medicine, Chapel Hill, 1906; member of the Medical Society of the State of North Carolina; past president, vice president and secretary treasurer of the Cumberland County Medical Society; formerly member of the board of trustees of the city schools and county physician; aged 53; on the staff of the Highsmith Hospital, where he died, February 24, of subacute bacterial endocarditis and malaria.

William Kemble Walker ☉ Phoenixville, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1891; member of the American Neurological Association and the American Psychopathological Association; professor of psychiatry at the University of Pittsburgh School of Medicine, 1910-1927; formerly on the staff of the Western Pennsylvania Hospital and St. Francis Hospital; aged 70; died, March 24, in the University Hospital, Philadelphia.

Leslie C. Sammons, Shelbyville, Ind.; Homeopathic Medical College of Missouri, St. Louis, 1899; member of the Indiana State Medical Association; president of the Indiana State Board of Medical Registration and Examination; past president of the Shelby County Medical Society; served during the World War; on the staff of the W. S. Major Hospital; aged 61; died, February 25, of carcinoma.

Lewis Bradley Bibb ☉ Major, M. C., U. S. Army, Atlanta, Ga.; University of Texas School of Medicine, Galveston, 1908; entered the medical corps of the U. S. Army as a first lieutenant in 1920; served during the World War; promoted to major in 1930; instructor in the national guard; aged 56; died, March 13, in a hospital at Wilmington, N. C., of injuries received in an automobile accident.

Charles Wilbur Mercer ☉ Biloxi, Miss.; Medical College of Virginia, Richmond, 1904; member of the Clinical Orthopedic Society, American Academy of Orthopedic Surgeons and the Missouri State Medical Association; served during the World War; formerly on the staffs of the Trinity Lutheran, St. Luke's and General hospitals, Kansas City, Mo.; aged 57; died, February 28.

Robert Parvin Crawford, Excelsior Springs, Mo.; University of Louisville (Ky.) Medical Department, 1904; member of the Missouri State Medical Association; served during the World War; aged 55; formerly on the staff of the Veterans Administration Facility, where he died, February 17, of tuberculosis.

William Irving Joss, Erick, Okla.; Hahnemann Medical College and Hospital of Philadelphia, 1906; member of the Oklahoma State Medical Association; on the staff of the Erick Hospital; aged 67; died, February 21, in St. Anthony Hospital, Oklahoma City of cerebral hemorrhage.

Fred Messenger Lowe, Newton, Mass.; Harvard University Medical School, Boston, 1885; member of the Massachusetts Medical Society; formerly city physician; aged 77; for many years on the staff of the Newton Hospital, where he died, February 28, of pneumonia.

Wayne Le Suer Bridgford ☉ Olympia, Wash.; Cooper Medical College, San Francisco, 1902; formerly member of the city council, mayor and city and county health officer; on the staff of St. Peter's Hospital; aged 59; died, February 22, of coronary disease.

Edward Boston Frisbee, Los Angeles; Tufts College Medical School, Boston, 1909; served during the World War; aged 53; on the staff of the Veterans Administration Facility, where he died, February 21, of chronic cholecystitis and chronic pancreatitis.

Louis Christian Brand, Kwangju, Chosen, Korea; University of Virginia Department of Medicine, Charlottesville, 1923; member of the Medical Society of Virginia; missionary; chief surgeon of the E. L. Graham Hospital, which he founded; aged 43; died, February 28.

William Francis Roberts, St. John, N. B., Canada; Bellevue Hospital Medical College, New York, 1894; minister of health; past president of the New Brunswick Medical Association and the American Academy of Physical Therapy; aged 68; died, February 10.

Karl Franklin Roehrig, Denver; Northwestern University Medical School, Chicago, 1907; member of the Associated Anesthetists of the United States and Canada; on the staff of the Denver General Hospital; aged 52; died, February 20, of coronary thrombosis.

J. Sumner Stone, Wheeling, W. Va.; University of Pennsylvania Department of Medicine, Philadelphia, 1879; formerly a minister and missionary; aged 82; died suddenly, February 18, in New Rochelle, N. Y., of acute dilatation of the heart.

Edward August Weisenhorn, Teutopolis, Ill.; St. Louis University School of Medicine, 1909; member of the Illinois State Medical Society; aged 55; on the staff of St. Anthony's Hospital, where he died, February 13, of pneumonia.

Maxwell Stevenson Inglis, Vancouver, B. C., Canada; Manitoba Medical College, Winnipeg, 1893; served with the Canadian Army during the World War; at one time provincial coroner in Manitoba; aged 74; died, January 20.

Alexander Aaron Stern ♂ Kingston, N. Y.; Long Island College Hospital, Brooklyn, 1889; fellow of the American College of Surgeons; on the staff of the Kingston Hospital; aged 69; died, February 26, of cardiorenal disease.

Clement Albert Weirick, Longmont, Colo.; Hahnemann Medical College and Hospital, Chicago, 1876; formerly professor of materia medica, emeritus, at his alma mater; aged 85; died, February 2, of acute dilatation of the heart.

Frank Emerson Way, Wahoo, Neb.; Boston University School of Medicine, 1890; past president of the Saunders County Medical Society; on the staff of the Community Hospital; aged 69; died, February 5, of cerebral embolism.

William Henry Terrell, Pittsboro, Ind.; Medical College of Indiana, Indianapolis, 1889; past president of the Hendricks County Medical Society; formerly county coroner and county health officer; aged 75; died, January 12.

Athol Horatio Wedge, Mendota, Wis.; University of Illinois College of Medicine, Chicago, 1916; served during the World War; on the staff of the Mendota State Hospital; aged 44; died, February 28, of myocarditis.

Walter Curtis Galloway, Gaithersburg, Md.; Washington University School of Medicine, Baltimore, 1874; member of the Medical Society of the State of North Carolina; aged 87; died, February 18, of cirrhosis of the liver.

Henry Bascom Weaver, Asheville, N. C.; Washington University School of Medicine, Baltimore, 1872; member of the Medical Society of the State of North Carolina; aged 86; died, February 13, of nephritis.

James Harrison Van Vorhis, Corcoran, Calif.; Northwestern University Medical School, Chicago, 1901; member of the California Medical Association; aged 64; died, February 9, of lobar pneumonia.

Donald Gillies Buchanan, Troy, N. Y.; Albany (N. Y.) Medical College, 1892; member of the Medical Society of the State of New York; aged 68; died suddenly, February 22, of angina pectoris.

John Howard Foster, Weogufka, Ala.; Atlanta College of Physicians and Surgeons, 1910; member of the Medical Association of the State of Alabama; aged 54; died, February 25, of myocarditis.

George Taylor Dawley, New London, Wis.; Rush Medical College, Chicago, 1881; for many years member of the school board and library board; aged 84; died, February 11, of cerebral hemorrhage.

Clayton Chester Ferguson, Newark, N. J.; New York Homeopathic Medical College and Hospital, New York, 1907; aged 70; died, February 2, of cerebral thrombosis and myocarditis.

Harriette D'Esmonde Keatinge, New York; New York Medical College and Hospital for Women, 1883; aged 77; died, February 15, in Pasadena, Calif., of carcinoma of the intestine.

Clinton Eldridge Galloway, Los Angeles; Medical College of Indiana, Indianapolis, 1882; aged 82; died, February 28, of fracture of the hip received in a fall and chronic myocarditis.

Louis Alexander Dewing ♂ Cambridge, Mass.; Medico-Chirurgical College of Philadelphia, 1901; aged 66; died, February 21, of cerebral arteriosclerosis and edema of the lungs.

William Grant Bond Decker, Detroit; University of Michigan Homeopathic Medical School, Ann Arbor, 1897; aged 68; died, February 6, in Willis, Mich., of cerebral hemorrhage.

John Felix Landry, Minneapolis; M.B., Laval University Faculty of Medicine, Quebec, Que., Canada, 1878, and M.D., in 1880; aged 82; died, February 4, of coronary sclerosis.

Walter D. Bennie, Naylor, Mo.; Missouri Medical College, St. Louis, 1890; aged 75; died in February of an infection developing from an injury received in a fall four years ago.

Mary Caroline Mackin Browning ♂ Cortland, Ohio; Woman's Medical College of Pennsylvania, Philadelphia, 1925; aged 58; died, February 18, of coronary embolism.

Edward H. Zenor, Hawthorne, Calif.; American Medical College, St. Louis, 1904; aged 68; died, February 11, of benign prostatic hypertrophy, hydronephrosis and uremia.

Julius H. Fiegenbaum, Alton, Ill.; Bellevue Hospital Medical College, New York, 1885; formerly city health officer; aged 78; died, February 26, of cerebral hemorrhage.

Edmund Kurt Walter, Montara, Calif.; University of Kansas School of Medicine, Kansas City, Kan., 1920; aged 49; died, February 6, of cardiovascular renal disease.

Joseph L. Black, Hood River, Ore.; Chicago Homeopathic Medical College, 1893; aged 69; died in the Hood River Hospital, February 24, of coronary occlusion.

Lester Everett Cox, Los Angeles; University of Pennsylvania Department of Medicine, Philadelphia, 1898; aged 61; died, February 28, of coronary sclerosis.

William Thane Partridge, Westerville, Ohio; Pulte Medical College, Cincinnati, 1888; aged 79; died, February 19, of hypostatic pneumonia and myocarditis.

William B. Craig, Indianapolis; Medical College of Indiana, Indianapolis, 1893; aged 69; died, February 16, in St. Vincent's Hospital of thrombosis and gangrene.

Charles F. Griswold, Waverly, N. Y.; University of Vermont College of Medicine, Burlington, 1889; aged 71; died, February 5, of mitral insufficiency.

Richard Washington, Claymont, Va.; Columbia University Medical Department, Washington, D. C., 1894; aged 75; died, February 3, of heart disease.

Bennette Auxford Burks ♂ Winter Park, Fla.; University of Alabama School of Medicine, University, 1910; aged 53; died, February 24, of leukemia.

Samuel Russell McCreary, Belleville, Ont., Canada; McGill University Faculty of Medicine, Montreal, Que., 1919; aged 44; died, January 28.

Frank F. Carl, Nichols, Iowa; State University of Iowa College of Medicine, Iowa City, 1886; aged 77; died, February 6, of coronary thrombosis.

David Stockley Sutherland, Halifax, N. S., Canada; Dalhousie University Faculty of Medicine, Halifax, 1925; aged 38; died suddenly, January 26.

James Elbert Adams, Jacksonville, Fla.; University of Nashville (Tenn.) Medical Department, 1903; aged 64; died, February 28, of myocarditis.

John Harold Brooks, Azusa, Calif.; Kentucky School of Medicine, Louisville, 1891; aged 69; died, February 21, of carcinoma of the prostate.

Henry A. Cook, Parrott, Ga.; University of Georgia Medical Department, Augusta, 1883; aged 75; died, February 21, of mitral regurgitation.

Harry Bain Avery, Taghkanic, N. Y.; Cornell University Medical College, New York, 1905; aged 54; died, February 27, of lobar pneumonia.

George Zimmerman, Fremont, Ohio; Chicago Homeopathic Medical College, 1884; aged 78; died, February 7, in Los Angeles of heart disease.

John Charles Bell, Merlin, Ont., Canada; Trinity Medical College, Toronto, 1884; L.S.A., London, England, 1886; died, February 9.

Joseph A. Milroy, Okmulgee, Okla.; Starling Medical College, Columbus, 1898; aged 67; died, February 7, of heart disease.

Harry Ward Hazlett ♂ Paonia, Colo.; Gross Medical College, Denver, 1902; aged 72; died, February 8, of Addison's disease.

Norman Anderson, Toronto, Ont., Canada; Trinity Medical College, Toronto, 1892; died, February 17.

Bureau of Investigation

TWO MINOR MEDICAL FRAUDS BARRED

The Darnell Cure-All and the J. Franklin Walker Swindle Are Served with Fraud Orders

DARNELL'S ORIENTAL KING OF PAIN.—Under the names "L. T. Darnell & Co." and "L. Darnell" one Mrs. Leroy T. Darnell—who had no medical training or qualifications—sold from Manchester and Osborn, Ohio, a preparation called "Darnell" or "Oriental King of Pain." This "patent medicine" seems to have been advertised as a cure for everything from soft corns to hardening of the liver. Specifically it was a "sure cure" for heart affections, rheumatism, catarrh, diphtheria, measles and "falling of the womb"; to say nothing of such antipodal complaints as deafness and piles!

This panacea was on the market for many years. It was originated by the late husband of Mrs. Darnell and when Darnell died some twenty years ago—presumably of some condition that his nostrum would not cure—his widow continued its sale. The Oriental King of Pain was found by government chemists to be nothing more esoteric than cottonseed oil (90%) and volatile oils, mostly eucalyptus (10%).

It was necessary under the law for the Government to introduce competent medical testimony to show that this mixture would not cure diphtheria or tuberculosis; that it had no value in heart affections nor would it cure scarlet fever, malaria, deafness nor "falling of the womb." The Post Office authorities called on "L. T. Darnell & Co." and "L. T. Darnell" to show cause why a fraud order should not be issued against them. No one appeared in Washington to defend the business but a Manchester, Ohio, attorney wrote to the office of the Solicitor of the Post Office Department stating that the respondent "admits the truth of the charges."

According to the official report of the case Mrs. Leroy T. Darnell was the only person connected with the business and she made up the nostrum in, and sold it from, her residence. On September 15, 1937, a fraud order was issued debarring from the mails L. T. Darnell & Co. and L. Darnell.

WALKER MEDICINE COMPANY.—Under this name and also under his personal name, J. Franklin Walker sold through the mails from Cincinnati, Ohio, two "patent medicines" known, respectively, as "Walker's Blood and Skin Purifier or Alterative and Laxative" and "Walker's Uneeda Tonic or Stimulant to Appetite."

One of the circulars put out by Walker read in part:

WALKER'S

BLOOD AND SKIN PURIFIER

Good for Pimples, Pustules, Tetter or Salt Rheum, Tumors, Blotches, Boils, Ringworms, Sores, Ulcerations, Scrofula, Syphilitic Affections, Rheumatism & All Blood and Skin Disorders, Also Female Trouble, Lost Manhood, Nervousness, Poor Appetite, General Rundown, Cannot Sleep.

UNEEDA TONIC

For Indigestion, Heartburn, Water-Brash, Sour Stomach, Nervous Stomach Ache, Gas on Stomach and all Disorders of the Stomach.

Chemical analysis by the government chemists showed that the "Blood and Skin Purifier" was a mixture of herb and root extractives including cascara, sarsaparilla, licorice, yellow dock and mandrake. It was essentially a laxative and not in any sense a cure for syphilis, tumors, "female trouble," "lost manhood," rheumatism and nervousness, as advertised by Walker.

The "Uneeda Tonic" was found to consist mainly of baking soda with small amounts of nux vomica, belladonna, peppermint and alcohol in water. This, the government officials declared, would not cure indigestion, nervous stomach-ache and all disorders of the stomach, as declared by Walker.

When J. Franklin Walker appeared in Washington to answer the charges brought against him he agreed to execute and file an affidavit providing for the issuance of a fraud order against the "Walker Medicine Company"—although not against his personal name—and he also stipulated that remittances received under his personal name would be returned immediately to the senders. On June 22, 1937, the mails were closed to the Walker Medicine Company of Cincinnati.

Correspondence

"RECOVERY FROM GONORRHEAL ENDOCARDITIS AFTER ARTIFICIAL HYPERPYREXIA"

To the Editor:—In THE JOURNAL February 19 is a paper by Freund, Anderson and Lilly entitled "Recovery from Gonorrheal Endocarditis After Artificial Hyperpyrexia." In the first paragraph of the second column on page 549 is the sentence "According to the criteria generally accepted, a patient proved to have gonorrheal endocarditis must have a positive blood culture in vivo or a positive culture or smear from the vegetations at necropsy." These criteria, however, as applied to a case in which recovery occurs are entirely inadequate as, in the authors' own words in the second paragraph in the first column on page 550, "A positive blood culture in itself is not definite evidence of endocarditis, for one frequently sees gonococcemia without endocardial involvement. . . . The diagnosis may be obscured by the presence of a chronic valvular disease and may not be detected until the signs of fresh valvular involvement or of embolic phenomena appear."

Immediately following this the authors cite seven cases from the literature which they believe are proved cases of recovery from gonorrheal endocarditis. However, applying the authors' own criteria it appears at once that, with the single exception of case 5, all the other six patients could perfectly well have recovered merely from a gonococcemia.

Case 5 is suggestive of recovery from gonorrheal endocarditis but unfortunately in the brief abstract of the case there is no mention of an examination of the heart prior to three months after the onset of the disease; there is no proof that this patient's diastolic aortic murmur had not been present before his gonococcemia.

In the authors' own case, under laboratory examination, there is a single observation: "63 per cent hemoglobin." There is no statement as to what method was used. Even if this was done by a reliable method such as the Sahli method, an anemia of that degree can cause a loud murmur by itself, particularly if associated with a high temperature and a rapid heart rate.

DUDLEY MERRILL, M.D., Cambridge, Mass.

DOCTORS IN A SOCIAL DIRECTORY

To the Editor:—A firm calling itself the National Social Directory Publishers, 340 North Michigan Avenue, Chicago, is and has been soliciting subscriptions to its Local Social Directories (e. g., New Orleans). Their charge for the latter was either \$2.50 or \$3.

They have delivered what they call the Southern Section, embracing Texas and the thirteen Southern states. Doctors seem to be easy victims. A casual examination of this precious "Social Directory" shows that, with names and addresses, there are in

New Orleans	38 entries	20 doctors
Birmingham	30 entries	19 doctors
Louisville	13 entries	3 doctors
Shreveport	19 entries	3 doctors
Asheville	17 entries	3 doctors
Charlotte	5 entries	3 doctors
Charleston	15 entries	4 doctors
Little Rock	45 entries	6 doctors
Jacksonville	11 entries	6 doctors

For all nine of these representative communities this so-called Social Directory gives the names of 193 families, of whom sixty-seven are doctors. It would appear that this publication is not in any true sense a social directory but simply a list of those who were "stung" by subscribing to what they supposed

would be something like the reputable works of this kind. As sixty-seven of the 193 who were caught in these nine cities were doctors, it has seemed to me that THE JOURNAL might feel inclined to issue a warning to its subscribers.

E. D. FENNER, M.D., New Orleans.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

LATENT SYPHILIS—POSSIBLE NEURO-SYPHILIS, TRANSMISSION

To the Editor:—An engineer, aged 26 years, in August 1936 had a blood reaction to the Wassermann, Kahn and Gradwohl tests of four plus. He began treatment immediately. He had no history of any lesions that might have been primary and has never had any symptoms. Other members of his family had Wassermann tests but all were negative. General physical examination and examination of the eyegrounds, reflexes and cardiovascular system all give negative results. He has had intensive, continuous treatment since Aug. 10, 1936, having received twenty doses of 0.06 Gm. of mapharsen at weekly intervals with mercuric salicylate 1 grain (0.065 Gm.) and thiobismol 0.2 Gm. at weekly intervals between the injections of mapharsen. The Wassermann test taken November 23 following this first series was a weak one plus, the Kahn test the same and the Gradwohl test two plus. He then received thiobismol 0.2 Gm. twice a week for seventeen doses and mercuric salicylate 1 grain twice a week for eleven doses up to April 7, 1937. At this time he developed dizziness, intermittent spells of numbness of the fingers of the left hand and lower left leg, stuttering or broken speech and a progressive slowness in grasping a question. He talked relevantly but with a slowing in thought and had the appearance of being startled when questioned. I was informed by his superior officer that he had slowed up considerably in his work. Two years previously he had been badly beaten, struck on the head and left lying unconscious in the street by an unknown assailant. When found, he was taken to the hospital for treatment. He states that he had a bad laceration on the right side of the head. X-ray examination gave no evidence of fracture of the skull. Spinal puncture was made several times and the fluid was bloody but he knows of no tests. He remained in the hospital for several days and was then released and able to resume his employment. When the symptoms developed I did a spinal puncture and the analysis revealed the colloidal gold test 112211000, globulin two plus positive, Wassermann one plus positive and Kahn one plus positive. I then gave him sixteen doses of tryparsamide every five days, starting with 1 Gm. and increasing to 3 Gm., finishing July 13. A blood test August 4 revealed the Wassermann reaction negative, Kahn weak one plus and Gradwohl negative. All symptoms completely cleared following this series of tryparsamide and he was as normal as ever and has remained the same. In view of the still weak positive Kahn reaction I gave him ten more doses of mapharsen, 0.06 Gm. at weekly intervals followed by ten doses of thiobismol 0.2 Gm. weekly, bringing treatment to November 1. The blood test November 16 showed the Wassermann, Kahn and Gradwohl reactions all one plus. Spinal puncture November 20 with analysis of fluid revealed the colloidal gold test 0000000000, globulin normal and the Kahn and Wassermann reactions negative. 1. What promise can I give this man of complete cure? 2. What is the prognosis? 3. What would you suggest regarding further treatment, type of treatment and how often? 4. How soon should he marry? 5. What about having children?

M.D., Wyoming.

ANSWER.—It is impossible to provide definite answers. On the basis of the information furnished, the patient when first seen in August 1936 had latent syphilis. It is unfortunate that the diagnosis of latency was not confirmed at the time by an examination of the spinal fluid. The illness of April 1937 is strongly suggestive of the development of dementia paralytica. While the somatic symptoms and psychic changes might have been caused by other conditions as, for example, chronic alcoholism, nevertheless their disappearance following treatment with tryparsamide lends weight to the belief that they were actually dementia paralytica.

However, this diagnosis is not confirmed by the serologic tests of the spinal fluid performed in April 1937. The statement that the Wassermann and Kahn reactions of the spinal fluid were one plus is meaningless. Serologic tests of the spinal fluid cannot be accurately interpreted except on a quantitative basis and it is essential to know the exact amount of fluid with which the tests were performed. In dementia paralytica the Wassermann test of the spinal fluid is usually strongly positive with very small amounts of fluid; e. g., 0.025 cc. The fact that this spinal fluid was probably incompletely positive may indicate either that the laboratory in which the tests were performed was unreliable or, less probably, that a spinal fluid

originally showing the "paretic formula" had been modified by the treatment already given. The negative spinal fluid examination of November 20 is not helpful in arriving at a diagnosis. It is suggested that the possibility of dementia paralytica be further investigated by means of neuropsychiatric consultation and by means of another examination of the spinal fluid in a different laboratory in which the Wassermann test is performed on a quantitative basis and by the method of ice-box fixation.

In the light of these considerations, the answers to the specific questions asked by the correspondent are as follows:

1. The promise of complete "cure" depends first on the accuracy of identification of the type of neurosyphilis and second on the interpretation that is put on the word "cure"; i. e., whether biologic, symptomatic or serologic. Biologic "cure" in the sense of eradication of the last remaining spirochete is probably completely impossible, as is also serologic "cure." Some degree of persistent positivity of blood, spinal fluid or both may be expected. Symptomatic "cure" is however possible, though the percentage probability of it cannot be accurately stated without further diagnostic information.

2. The prognosis cannot be accurately outlined until the type of neurosyphilis is defined.

3. In view of the strong probability that the patient has had dementia paralytica, even though he may now be in a complete remission, he should certainly be treated at once with artificial fever, preferably with induced malaria. Following the completion of malaria therapy his treatment should be carried on for another minimum period of one year, preferably with tryparsamide and a bismuth compound, given either in alternating courses of from ten to twelve injections each or with tryparsamide given continuously, a course of bismuth being given simultaneously from time to time. The bismuth preparation used should preferably be an insoluble salt suspended in oil or a liposoluble salt rather than the water soluble thiobismol.

4. The question as to how soon he should marry depends, first, on his probable infectiousness for his marital partner which, in view of the suggested diagnosis of dementia paralytica and the large amount of treatment he has so far had, may be discounted, and, second, on his willingness to tell his fiancée that he has had syphilis, so that she may accept or reject whatever risk of infection of herself may exist and whatever risk there may be as to chronic invalidism or death in the patient. Since the risk of infection to her seems to be small, this consideration may be discounted, provided his wife is willing to undergo the examinations mentioned in paragraph 5.

5. It is quite safe for the patient to have children provided he does not infect his wife with syphilis. The disease is never transmitted from father to child but only through the mother. If and when his wife becomes pregnant, the possibility of infection in her should be guarded against by blood serologic tests carried out every four to six weeks throughout the entire course of her pregnancy. If these tests are negative, it may be assumed that she has escaped infection and that the child will be healthy. If, on the contrary, a positive test develops, a healthy child may be obtained by treatment of the mother, provided her treatment is begun early enough in pregnancy.

ALLERGY IN TWINS

To the Editor:—I am preparing an original article based on a study of identical and unidentical twins in one family. The identical twin had the same allergies up to a certain age, but one, for some unknown reason, had progressive asthma and the other lost all evidence of allergy. Are there any other studies of allergy in identical twins reported in the literature?

M.D., New York.

ANSWER.—Spaich and Ostertag (*Ztschr. f. menschl. Vererb. u. Konstitutionslehre* 19:731, 1936) showed that the allergic conditions existing in allergic twins are common to the two twins in from 80 to 100 per cent of the cases. Migraine is common to the two in about 80 per cent of the cases and urticaria in from 66 to 91 per cent of the cases, while asthma is common to the two in from 28 to 58 per cent. In instances in which only one twin is affected there is usually no familial allergy. In asthma of the two identical twins other allergic conditions are not common. In cases of familial sensitization manifested in both twins there is usually multiple allergy, more marked however in girls than in boys. The authors' conclusion is that when one twin is allergic the family history may be negative, but when both are allergic the family history is positive as a rule.

At the 1936 meeting of the Association for the Study of Allergy Bret Ratner read a paper on "Does Heredity Play a Role in the Pathogenesis of Allergy?" (*J. Allergy* 8:273 [March] 1937). Ratner studied 250 allergic and 315 normal

children and their respective families and found the incidence of allergy in the family of the allergic child about the same as in that of the normal child. From 7 to 10 per cent of the total general population are allergic. So-called allergic families in whom a large proportion are allergic are very rare. About 50 per cent of the families, both of allergic and of normal children, show no allergy in their lineage. No conformity with the simple mendelian laws of inheritance in allergic case histories was found. About 5 per cent of the children showed symptoms of allergy in the first year of life; allergic symptoms developed in almost all before the age of 8. Ratner believes that the development of allergy in children is to a large extent due to chance and that a child may become sensitized in the uterus of the mother before birth. Ratner does not believe that susceptibility to allergic diseases is inherited through germ plasma and he therefore hopes that proper preventive measures can be instituted to control and to a large extent eradicate allergic diseases.

In the discussion that followed Ratner's paper much disagreement was evident. Sulzberger felt that it was almost impossible to be scientifically accurate in purely clinical research in human heredity, owing, for one thing, to the uncertainty of paternity. Sulzberger believes in common with the large majority of those doing special work in allergic diseases that in allergic patients the familial incidence of allergic conditions is very much higher than in normal individuals.

As regards the relationship of identical twins and allergy, several allergists mentioned cases. Kahn has a pair of identical twins, one with severe pollen asthma, the other symptom free. Milton Cohen stated that he had several pairs of identical twins with one child showing active allergy and the other no evidence of allergy. On the other hand, Benson discussed two sets of identical twins in which all four patients had severe asthma; Credille, one set with asthma; Fineman's set of identical twins, aged 8, both developed asthma at the age of 4 and both are sensitive by skin tests to the same foods, wheat, mustard and radish, and both give positive skin tests to ragweed without clinical evidence of hay fever.

Tuft (Clinical Allergy, Philadelphia, W. B. Saunders Company, 1937) believes that active fetal sensitization by way of the placenta is a more plausible concept than passive fetal sensitization in utero.

In the literature are many articles on the relationship of heredity to allergic diseases, such as that of Wiener, Zieve and Fries (*Ann. Eugenics* 7:141, 163 [Sept.] 1936).

PAINFUL BREASTS FROM ESTROGENIC SUBSTANCES

To the Editor.—In the course of receiving injections of theelin in oil, a patient with early menopausal symptoms has developed markedly caked breasts or a sort of cystic mastitis. On discontinuance of the theelin, the painful lumps have disappeared for the most part. Is this condition a frequent occurrence? Do you think it would be due to overdosage? Is there any other treatment than stopping the theelin?

W. L. SHARP, M.D., Anderson, Ind.

ANSWER.—It is known that estrogenic substances, of which theelin is one, are responsible for growth and branching of the mammary gland trees, possibly slight stimulation of the alveoli, and development of the nipple. Corpus luteum hormone (progesterone) in the presence of estrogen produces development of the alveoli to a condition resembling that found during the first fifteen days of pregnancy or pseudopregnancy.

Mazoplasia is characterized by a hyperplasia of the periacinous connective tissue, new formation of ducts and acini and desquamation of epithelial cells in the terminal ducts and their acini. The ducts and acini become distended by the exfoliated epithelial cells, giving rise to diffuse and generalized nodularity (lumpy breasts). The most pronounced symptom is a diffuse, aching pain over the whole area of one or both breasts, generally more on one side than on the other. The pain is often worse at menstruation. Women suffering from mazoplasia often show evidence of ovarian hypofunction. The menstrual periods are frequently of short duration and the menstrual flow is usually scanty.

There are some who believe that these painful breasts associated with menstrual disturbance are due to an inadequate amount of estrogen. There is reason to believe that the condition may be due at least in some cases to a high secretory level of estrogen rather than to a hyposecretion of this hormone, though it is frequently relieved by administration of estrogen.

The patient in question perhaps has some follicular development during each menstrual cycle with the production of growth of the gland trees in the breasts. It is quite possible that the amount of estrogen secreted by the follicle during the menopausal disturbance in this patient may stimulate a certain amount of lacteal duct development. The addition of theelin further

stimulates growth of the gland trees and congestion in the breasts, causing them to be painful. It is stated that when the theelin is discontinued the painful lumps have disappeared for the most part. This is evidence that the condition is due to hyperstimulation by the estrogen.

Painful breasts are a rather common occurrence in many young women during the latter part of the menstrual cycle and the condition, while painful, will probably not lead to serious consequences. If the injection of theelin aggravates the condition, perhaps it would be better to give smaller doses (no statement of doses administered was made).

If the patient needs estrogen to relieve menopausal symptoms and if small doses (say from 50 to 100 rat units three times a week) cause pain, perhaps the pain might be relieved by local application of heat or some mild analgesic.

HEADACHE

To the Editor.—A man, aged 59, has always enjoyed good health except for pneumonia followed by a lung abscess with complete recovery five years ago. For the past three months he has been getting sudden headaches following coughing, sneezing or at times quick movements of the head. The pain is over the left frontal and temporal regions, with the greatest point of pain near the vertex. The pain is quite sharp, somewhat throbbing in character and moderately aggravated by activity. It is relieved promptly by acetylsalicylic acid and related compounds or will disappear gradually in about one hour if he lies down. The headaches do not follow any regular periodicity, never are present on awakening, may occur several times in one day or may not occur for several days, depending on the presence of the mechanical factors of production. The patient is thin, though well nourished, vigorous and active and is of a somewhat nervous temperament. The temperature is 98.6 F., the pulse 72 and the blood pressure 134 systolic, 76 diastolic. Examination of the head reveals that the ears, eyes and pupillary reflexes are normal. The septum is slightly deviated. The turbinates are normal. There is no discharge. There are no polyps. The tonsils are apparently normal. The teeth appear to be in good condition. The frontal and maxillary sinuses are not tender to pressure and transilluminate clearly. There are no neuralgic spots on the scalp. The heart, lungs, abdomen, spine and extremities are essentially normal except that the deep reflexes are exaggerated. No pathologic reflexes, palsies or disturbances in sensation were noted. The patient feels perfectly well except for this complaint. He eats well, he has no dyspepsia, the bowels are regular and there are no genito-urinary complaints. Sleep is also normal. Urinalysis, blood count and blood Wassermann tests are normal. No x-ray studies of the sinuses or sella turcica have as yet been made. I will greatly appreciate any suggestions that you may be able to make which may point to a diagnosis and the alleviation of this unpleasant condition.

FREDERICK S. TABER, M.D., New Brunswick, N. J.

ANSWER.—Coughing and sneezing produce a sudden interference with the venous return from the head. This engorgement of the veins results in increased intracranial pressure, and the shock of the sudden interference is directed against the gasserian ganglion or its branches. For this reason coughing or sneezing may aggravate any headache or precipitate a latent one. The problem in this instance would appear to be that of determining why these nervous structures are abnormally sensitive to such impulses. Since this history does not indicate intracranial disease, arteriosclerosis or chronic fatigue, the ethmoid sinuses should be examined. Inflammation there has been known to give rise to such phenomena. The sphenopalatine ganglion may be treated with ephedrine or cocaine to determine its possible participation in the syndrome. Symptomatic treatment with bromides and salicylates may give considerable relief if taken regularly for two or three weeks.

INJECTION OF VAS DEFERENS

To the Editor.—Can you give me any information on the solution used for injection into the vas deferens for prostaticism? The method is used in this section with considerable success but I have been unable to find out the chemical nature of it.

M.D., Neb.

ANSWER.—There has been no serious consideration of the possible therapeutic value of operations on the vas deferens in prostaticism since the turn of the century, at which time a temporary interest in castration and vasectomy actually hindered progress in the sound surgical cure of this condition. Vas ligation is now employed only as a preliminary step in the preparation of a patient for prostatectomy. There are instances, only too well known, wherein this minor preliminary step has been offered as the complete cure to patients and large fees have been collected for a procedure worthless except to ward off epididymitis. The treatment of prostaticism has developed logically and gradually and the approved methods can be studied from any one of the many excellent modern textbooks, in which one will fail to read of injections into the vas deferens being of temporary or permanent value in controlling symptoms.

Injections of the vas deferens are used occasionally in the treatment of stubborn cases of chronic vesiculitis and the asso-

ciated prostatitis. A solution of from 1 to 2 per cent mercuriochrome or 5 per cent collargol, 5 cc., is injected into the lumen of the vas deferens through a surgically clean wound. Care must be taken that the solution enters the vas and is not injected into the fascial layers of the cord. The possibility of sterility from occlusion of the vas following this procedure must be reckoned with when offering it as a possible therapeutic measure.

"CARBITOL"

To the Editor:—It has recently been brought to my attention that some of the pharmaceutical preparations of the George Breon Company, within the last few months, contained a derivative of diethylene glycol, called carbitol, in concentrations ranging roughly from 3 to 15 per cent. The company's detail men as well as federal agents are now engaged in gathering up the lots dispensed in this territory, which contained the carbitol. I have had the misfortune of dispensing about two thirds of a gallon of a cough preparation called bellamphor, chiefly to children. I am now engaged in checking back and collecting unused material and fortunately have observed no toxic manifestations as yet.

A. C. R., M.D.

ANSWER.—Other inquiries have come to the attention of the office of the Council on Pharmacy and Chemistry. The following communication was sent to Breon & Co. by the Secretary of the Council:

There has been received in this office correspondence from physicians stating that some of the preparations of Geo. A. Breon & Co. within the last few months contained a derivative of diethylene glycol called Carbitol.

One of these preparations, it has been stated, was Bellamphor. Will you kindly state for the information of THE JOURNAL what preparations of Geo. A. Breon & Co. have contained diethylene glycol, or carbitol, or similar substances used as solvents?

A letter signed by the firm's laboratory director states:

None of our preparations contain diethylene glycol. The mono-ethyl ether of diethylene glycol, known under such trade names as "Gly-Ketol" and "Carbitol," was used as a solvent in five preparations until November 1, 1937. The period of such use was seven and one half years. In further reply to your inquiry of December 22, no other derivative of diethylene glycol has been used by us.

Carbitol is listed by its manufacturers, the Carbide and Carbon Chemicals Corporation, under the head of "Alcohols-Ethers" and has been recommended for use by at least one reputable distributor as a solvent in pharmaceuticals for human consumption for the past ten years. During the years that we used the substance, we have no record of receiving a report of and do not recall a single instance of any harmful effects being associated with it.

The five preparations, the percentage of Carbitol contained, and the therapeutic doses were:

Bellamphor, 5.1%; 1 to 1½ teaspoonfuls every 4 hours.
Bismudin, 5.25%; 1 tablespoonful 3 times a day.
Citrace, 1.96%; ½ to 1 tablespoonful 3 times a day.
Glycerophosphates-Strychnine Compound, 5.1%; 1 to 2 teaspoons 3 times a day.

Gwia-Lyptus, 16.7%; 1 to 2 teaspoons every 3 hours.

Distinction should be made between the above products and any other by noting the percentage of the solvent contained, the doses of the preparation given, as well as differences in the character of the solvents.

A comprehensive toxicological study of the various glycols and their derivatives is in progress in our research laboratories. This work, as yet incomplete, indicates that the mono-ethyl ether ("Carbitol") is distinctly less toxic than diethylene glycol itself. A complete report of this research will be published in the near future.

Tests on the individual preparations named are being made. Gwia-Lyptus, which contains the highest percentage of "Carbitol," has been administered by stomach tube to white rats five times a day in doses of 2 cc. per kilo (equal on a weight basis to that contained in fifteen times the maximum adult therapeutic dose). At this high level of dosage the preparation has resulted in no deaths and has not prevented the continued growth and apparent normal development of the animals under continuous treatment for twenty days. One rat in this series which was sacrificed after sixteen days showed normal kidneys and liver.

STAINS FOR TRICHOMONAS VAGINALIS

To the Editor:—Will you kindly give me methods of fixing and staining smears which can be used for demonstrating *Trichomonas vaginalis*? Do the ordinary methods of staining show up the flagella? Does this organism have a sharp cell membrane? Could you also send me directions for preparing the various fixing and staining solutions?

M.D., New York.

ANSWER.—The usual procedure for studying flagellates is to stain them according to the Schaudinn fixation iron hematoxylin method. This requires considerable time and experience. It is almost impossible to complete the staining in less than twenty-four hours. Smears prepared by the Schaudinn method clearly demonstrate the protoplasm, nucleus and vacuolization, but the flagella are not always clearly visible. *Trichomonas vaginalis* can also be stained with the ordinary gram stain, but whereas the body structure of the organism is clearly demon-

strable the flagella are not often visible. Ewing and Le Moine (*Surg., Gynec. & Obst.* 48:192 [Feb.] 1934) experimented with many stains in an effort to bring out the flagella and finally found a dilute carbolfuchsin stain which invariably showed the trichomonas flagella and good body detail. The technic of making carbolfuchsin stains is simple and includes the following steps. (1) Smears are made thin; (2) they are fixed in air and not flamed; (3) the slides are covered with carbolfuchsin (about 20 to 25 drops); (4) 20 drops of distilled water is added and allowed to stand for three minutes; (5) the slides are washed with distilled water and dried between filter or blotting papers; (6) examination is made under an oil immersion lens. Ewing and Le Moine make two dry smears and a hanging drop in every case. One dry smear is stained by the usual Gram stain method and the other by carbolfuchsin.

A modification of Gram's method suggested by G. H. Ruhland and in use at the Mayo Clinic for many years is as follows:

1. Make smears, dry and fix by heat or mercury bichloride.
2. Cover preparation for half a minute with a 2 per cent solution of crystal violet in methyl alcohol of the highest purity.
3. Wash with water.
4. Apply Gram's iodine solution for one-half minute.
5. Wash in alcohol until purple ceases to come off. This is conveniently done in a watch-glass.
6. Apply a contrast stain for from one-half to one minute. A 1 per cent aqueous solution of safranin is much better than bismarck brown or fuchsin.
7. Wash in water, dry and mount.

The use of a hanging drop or wet smear under a cover glass occasionally offers difficulties when the trichomonads are few or when their motility is temporarily suspended. J. R. Miller (*THE JOURNAL*, Feb. 22, 1936, p. 616) found that a drop of 0.1 per cent safranin is useful as a diluent for the pus that is to be examined. Not only the nuclear material but the protoplasm also of the leukocytes rapidly takes the safranin stain, whereas the *Trichomonas vaginalis* organism remains unstained and conspicuous as a clear object against a slightly pink background. The safranin does not interfere with the motility of the trichomonads; if anything, it appears to stimulate it.

Trichomonas has a sharp cell membrane.

GASTRIC CRISES

To the Editor:—1. What factors precipitate attacks of gastric crisis in a patient subject to them? 2. Is there any prophylaxis against further attacks of gastric crisis in a patient who has already had several? 3. What percentage of patients with gastric crisis have a positive spinal fluid Wassermann reaction, an abnormal gold curve or an increased cell count, or an abnormal protein value at the time of the first attack?

M.D., New York.

ANSWER.—1. The factors that precipitate gastric crises in a tabetic patient subject to them are unknown. It has been suggested by various authors that the gastric crisis characterized by intense nausea and vomiting but without pain is vagal in origin, while that in which pain is the predominant feature, with nausea and vomiting subordinate or even absent, is due to involvement of the sympathetic system. These suggestions are, however, only hypotheses, since nothing definite is known of the pathology of gastric crises and the suggestions do not offer help in determining the precipitating factors. Actually the gastric crisis is distinguished from most other acute gastrointestinal upsets by the fact that it occurs in the absence of any precipitating factor.

2. The only prophylaxis against further attacks of gastric crises in a patient who has already had one attack is treatment of the underlying tabes or, if this fails, by further special measures directed at the gastric crisis itself. Routine antisiphilitic treatment is ineffectual. Subdural treatment with arsphenaminized serum by the Swift-Ellis method results in some relief from the gastric crises in about 25 per cent of patients treated. Fever therapy, preferably with malaria, will completely eliminate or definitely alleviate gastric crises in perhaps 50 per cent of the patients treated. If all of these methods fail, induced spinal anesthesia is occasionally successful. Numerous operations have been proposed for the relief of gastric crises, including chordotomy with section of the anterolateral columns, bilateral section of the vagus, posterior rhizotomy and abdominal sympathectomy. None of these operative procedures are particularly satisfactory and none should be attempted except as a last resort.

3. Approximately 20 to 25 per cent of tabetic patients with gastric crises may be expected to have normal spinal fluids or spinal fluids in which only minor abnormalities in cell count or protein content are present. In the remaining 75 to 80 per cent the several cerebrospinal fluid tests may be expected to be abnormal in varying degrees.

INTERMITTENT THERAPY OF SYPHILIS

To the Editor:—A man, aged 30, sexton and painter, married three months ago, acquired syphilis in October 1933 and first submitted to treatment during January 1934, at which time he had broken out with a secondary rash and ulcer in one tonsil. A roentgenogram of his chest showed old healed pulmonary tuberculosis in both apexes. Examination of the urine gave negative results. The Wassermann reaction was 3 plus with both antigens. He was given about sixty treatments each of neoarsphenamine and bismuth sodium tartrate during an eighteen months period, with rest periods after each six weeks of treatment of from one to two months. Most of the arsphenamine treatments were given earlier and the bismuth later in this period. Treatment was then stopped for several weeks because of the appearance of a positive albumin test. This varied from 1 to 2 plus and cleared up only to reappear on resumption of any of the usual metal treatments. I tried mapharsen 0.03 Gm., mercury rubs, "mixed treatment" tablets and potassium iodide in light doses and all provoked kidney irritation within a few days after their use. Even after one year's rest from all forms of treatment potassium iodide, 1 minim (0.06 cc.) three times a day, provoked irritation (as evidenced by a positive albumin test) within ten days. A recent Wassermann test was reported four plus with all antigens. A spinal tap has not been done. The patient feels well and there are no evidences of neurologic or vascular involvement.

M.D., New York.

ANSWER.—It is unfortunate that it is not clear whether the bismuth preparation was an aqueous solution or a suspension in oil. This would really make some difference. The aqueous preparation of bismuth sodium tartrate should be given three times a week to get a proper bismuth effect. The suspension in oil given once a week gives a reasonably good bismuth effect. This case shows well the mistake that is made in employing rest periods in the treatment of acute syphilis. After six weeks of treatment the patient was given from one to two months of rest. Is it not reasonable to suppose that the organisms remaining in the patient's body after a period of treatment would once more begin to multiply during this rest period? That probably explains why the patient still has a positive Wassermann reaction. The studies of the Cooperative Clinical Group have shown that relapses come early in the course of a case of syphilis and that they are far more prone to occur when the patient has been treated by the intermittent method of therapy. If continuous therapy is employed in the way of alternating courses of an arsenical and of a bismuth preparation, no opportunity is given for the spirochetes to multiply. The attack is a constant one, and the response of the disease to treatment is much better than when intermittent courses of treatment are employed.

The patient should be carefully examined from the standpoint of central nervous system syphilis and a lumbar puncture done at once. Moreover, the cardiovascular apparatus should be examined, for this type of patient is prone to cardiovascular, central nervous system and mucocutaneous types of relapse.

Until this information is at hand, it would be difficult to give more specific information as to what further should be done. If this patient had had the stated therapy given in a continuous manner without the rest periods, provided of course the bismuth preparation was a suspension preparation in oil, further therapy probably would not be necessary. As it stands, however, there is a question and further study of the patient is indicated.

DERMATITIS FROM BLACK CLOTHING

To the Editor:—A white woman, aged 34, has a dermatitis apparently caused by wearing black clothing. She states that during her entire life any time that she wears a black dress of any texture except pure silk the dermatitis appears within twenty-four hours on her neck, axilla and elbows; in other words, wherever the dress comes in contact with her skin. Is there any way that she can be desensitized to black dyes?

F. CECIL ADAMS, M.D., Klamath Falls, Ore.

ANSWER.—It is difficult to see why this woman is sensitive to black dyes in every other cloth but silk. As far as our information goes, black dyes in silk would not differ substantially from those used otherwise.

The subject should first test herself with a bit of material from a dress she wishes to purchase. The proper test medium is the patch method. A centimeter square or larger piece of test material is laid on a normal skin area, covered with an impervious material, such as waxed paper or oiled silk, and fastened into place with adhesive plaster. A positive test is indicated by an inflammatory response (often vesicular) of the skin directly in contact with the bit of cloth. The patch should remain in contact forty-eight hours and the results observed at that time and at intervals of a day. A positive test is manifested at times only after several days. Care should be exercised not to obtain a false positive test, as from the adhesive plaster used. At times only certain sites will react either with a clinical dermatitis or to a patch test. In such cases they must be the areas for testing to avoid a false negative result.

Rarely the axilla is such a special site, perhaps because the sweat differs from that of most of the rest of the skin.

Attempts to desensitize persons to dyes and other related materials has not had much success. The practical thing for the patient to do about her clothes problem is to wear only such garments as previously give her a negative patch test.

SPASMOSEDINE, CORTIODE AND EUTONON

To the Editor:—What would be an analogous American preparation to the following French Pill "Spasmosedine," which has the following formula:

Phenylethylmalonylurée	0.015	} Pour un comprime?
Bromhydrate de quinine	0.05	
Extrait de crataegus	0.05	

What is the physiologic effect of the French cortioid? What would be a fully effective American preparation having that effect? What is the German remedy "Eutonon," used with dextrose intravenously?

M.D., Chicago.

ANSWER.—The prescription translated would read as follows:

R Phenobarbital	0.15 Gm.
Quinine hydrobromide	0.50 Gm.
Extract of crataegus	0.50 Gm.

M. and div. into 10 caps.

One or two capsules two or three times daily might have a therapeutic effect in certain cases of precordial distress by acting as a sedative to cardiovascular innervation; phenobarbital has a tendency to lower blood pressure and quinine hydrobromide to slow the pulse rate. The value of crataegus is quite *sub judice*. Its effect, if any, as a sedative to the circulation is quite irregular and often so slow in asserting itself that its real value has been doubted. The following prescription yields a sedative effect on the circulation for the relief of precordial distress by a depressant action on various portions of the nervous system:

R Phenobarbital	0.5 Gm.
Quinine hydrobromide	2.0 Gm.
Carbromal	4.0 Gm.

M. and div. into 15 caps. One three times daily after meals.

"Cortioid" is stated to contain "iodobenzomethyl monoforimine," a substance formed by the combination of iodine (42 per cent) with formaldehyde and a benzyl radical. It is probable that the better known sodium iodide is entirely equivalent in therapeutic effect in arterial hypertension, angina pectoris and coronary sclerosis whether given by intravenous injection or by mouth.

"Eutonon" is a liver extract, said to contain tyramine and choline as its active principles; it was originally proposed for use as a depressor substance but results have been disappointing.

LIPOID HISTIOCYTOSIS, OR NIEMANN-PICK'S DISEASE

To the Editor:—A baby, aged 8 months, had frequent spells of vomiting since five months following delivery. About four months ago the liver and spleen became enlarged and have continued to increase in size. The blood count showed hemoglobin 75 per cent, red blood cells 4,560,000, white blood cells 10,600 and a normal differential. About two weeks ago, bone marrow studies were made in the hospital. Vacuolated white blood cells were found in the blood smear and "foam" cells were found in the bone marrow smears. A variation in the normal macula of the eye was found, but this was not a typical cherry red spot. Diagnosis of Niemann-Pick's disease was made. What is the present status of opinion regarding etiology and treatment?

M.D., New York.

ANSWER.—Niemann-Pick's disease, or lipid histiocytosis, is a disturbance in lipid metabolism of unknown etiology which is characterized by a widespread deposition of lipid material, essentially phosphatids, in large foam cells in all the organs of the body, particularly the spleen, liver, bone marrow and lymph nodes. The disease is congenital and familial and occurs almost exclusively in infants of the Jewish race. It runs a rapid downhill course and is always fatal. There is no known treatment at present that is of any value.

Niemann-Pick's disease must be differentiated from the other xanthomatoses, such as Gaucher's and Schüller-Christian's disease. The blood lipids are usually increased to from two to four times the normal amount. A cherry red spot in the retina may be present, suggesting a relationship to amaurotic family idiocy, in which the lipid disturbance affects only the central nervous system. The most valuable diagnostic procedure is sternal aspiration, which reveals the characteristic foam cells in the marrow.

The cause of the abnormal lipid metabolism in this disease is unknown. The most plausible theory, as suggested by Pick, is that of Sobotka and his associates. These investigators believe that the disturbance lies in the inability of the normal fat-forming cells to convert lecithin-fatty acid esters into neutral

fat. They suggest that certain enzymes which are present normally and which are necessary for this process are lacking in this disease. This theory is still unconfirmed.

References:

- Pick, Ludwig: Niemann-Pick's Disease and Other Forms of So-Called Xanthomatosis, *Am. J. M. Sc.* 185: 601 (May) 1933.
Sobotka, Harry; Epstein, E. Z., and Lichtenstein, Louis: Die Lipoidverteilung bei der Niemann-Pickschen Krankheit, *Klin. Wchnschr.* 11: 1028 (June 11) 1932.

POSSIBLE POSTENCEPHALITIC SYNDROME IN GIRL

To the Editor:—A girl, aged 13 years, in good health until she was 8½ years of age, was seized suddenly one morning at about 6 o'clock with an attack of loud, labored breathing, associated with a spasm of the entire body and unconsciousness which lasted about forty-five minutes. A month later a similar attack occurred, and gradually these attacks have increased in frequency until at present the patient has from fifteen to sixteen every twenty-four hours. The attacks last about two minutes now. They come on suddenly, without an aura, and have the following characteristics: At the onset both eyes turn upward and the child falls backward to the floor with both eyes turning to the left, the child turning the entire body counterclockwise. The body is rigid and there is no clonus. The patient loses consciousness during an attack and only recently has she had involuntary urination during the attack—although never an involuntary bowel movement. Following the attack the child breathes heavily, is very weak and makes purposeless movements such as pulling her fingers, scratching her head and picking her nose. The only other essential point in the history is that about one year previous to the first attack the patient complained of an almost constant generalized abdominal aching with frontal and parietal headaches, at which time the mother thought the child had worms. At present the child has a blank expression, answers questions infrequently and obviously is mentally deficient. Her speech is somewhat slurred and monotonous. There are no definite cerebellar signs and the reflexes are all normal. The past history revealed frequent sore throats during childhood, and about three months before her first attack a tonsillectomy and adenoidectomy was done. Her first menstrual period was in March 1937 and the next was in June, and since then she has not menstruated. The physical examination, urine and blood examination are essentially negative. Please advise as to possible diagnosis or suggestions for work-up. M.D., Illinois.

ANSWER:—The history of paroxysmal attacks of forced breathing associated with convulsive manifestations suggests the possibility that one is dealing with a postencephalitic syndrome. The upward turning of the eyes and the loss of facial expression are compatible with this possibility.

An encephalogram would be valuable from both a diagnostic and a therapeutic point of view. One would rather expect to find some cortical atrophy, as well as enlarged ventricles. This procedure also provides for skull roentgenograms and spinal fluid examination. If encephalitic in character, the sugar content of spinal fluid may be elevated.

The following therapeutic tests are valuable:

1. Scopolamine hydrobromide 0.00065 Gm. (1/100 grain) three times a day.
 2. Tincture of stramonium in graduated doses of from 0.6 to 3 cc. three times a day.
 3. Atropine sulfate in graduated doses of from 0.00026 to 0.0013 Gm. (1/250 to 1/100 grain) four times a day.
- This must be graduated slowly under careful observation, about three weeks being allowed to reach the maximum doses. In encephalitic syndromes, definite amelioration may be obtained.

MARBLE BONE DISEASE

To the Editor:—A patient, 19 months old, has been diagnosed as having marble bone disease (Albers-Schönberg disease). What is the etiology and treatment? What is the prognosis? Ph.G., New York.

ANSWER:—The etiologic factors producing marble bones (Albers-Schönberg disease) are not known. Occurrence of the disease in more than one child in the same family, in a child and one parent, and in cousins suggests a familial tendency. Kinship between the two parents of many of the patients has been reported, and this has led to the theory that inbreeding may be a factor in producing the disease. An abnormally high inorganic phosphate content of the blood has been reported in these patients, while the blood calcium content has been normal. The patients show marked calcium and phosphorus retention or a high positive mineral balance. A condition quite similar to this can be produced in rats by repeated injections of parathyroid extract. The abnormal mineral metabolism in patients suffering from marble bones definitely suggests that the primary etiologic factor is caused by disturbance in the endocrine glands, and the parathyroid glands are most under suspicion.

No treatment has been of definite benefit. McCune and Bradley (*Am. J. Dis. Child.* 46:1462 [Dec.] 1933) treated a patient with this disease by administering parathyroid extract but were not successful either in obtaining a negative calcium or phosphorus balance or in changing the appearance of the marble bones. Surgical removal of one or more parathyroid

glands has been suggested. The danger of death from tetan and the incomplete information regarding the disease would seem to cast much doubt on the justification for this operation.

If the condition is generalized, with involvement of the bone of the skull and face, the prognosis is poor. The nerve foramina may become encroached on, this condition resulting in blindness deafness or both. The sclerosed bones are brittle and fracture are common when the long bones are involved. Such fracture heal with excessive amounts of callus.

The infants often die from inanition or intercurrent infection. In mild cases with relatively little involvement of the bones of the skull the patient may live a normal life, marry and have children. Pirie (*Am. J. Roentgenol.* 24:147 [Aug.] 1930) has reported Albers-Schönberg disease in a patient aged 58 years.

TREATMENT OF OBESITY

To the Editor:—A woman, aged 25, who has been increasing in weight for a number of years, was treated with radium for metrorrhagia. She seems to think that her weight increased more rapidly after that. The basal metabolic rate taken some time ago was said to be low. Her hips, thighs and abdomen are so conspicuously large that her husband will not be seen out with her. Enteric coated tablets of thyroid 5 grains (0.3 Gm.) taken two or three times a day do nothing more than accelerate her pulse and cause dyspnea on the least exertion. Dinitrophenol 1½ grains (0.1 Gm.) three times a day after eating does nothing more than increase her weight. A combination of two dinitrophenol capsules a day and one thyroid tablet has no effect. Double strength solution of posterior pituitary 1 cc. or more administered by the patient every day for three weeks has resulted in a gain of 6 pounds (2.7 Kg.). The only good she has obtained from it is more clearness of cerebration and greatly increased energy for housework. She administers the solution of posterior pituitary in the same manner in which a diabetic patient administers insulin, except that a slightly longer needle is used so that the injection is made into the quadriceps. Antuitrin and antuitrin-S have reestablished the menstrual periods to a certain extent but without any effect on the weight. A physician once prescribed a diet of skimmed milk and spinach for her and after three weeks she had gained considerably. Is there anything about the pancreas that might affect the deposition of fat or rather increase its deposition independent of the pituitary gland? It is evident that there are mysteries which still shroud such cases of obesity as this; however, your opinion in the matter of the underlying pathologic condition and its possible treatment would be greatly appreciated. M.D., Mass.

ANSWER:—Although there are many mysteries concerning such cases, they will never be solved by indiscriminate use of substances that are without a sound therapeutic basis. This patient was given 0.3 Gm. of thyroid in spite of the fact that the only recorded knowledge of her basal metabolism was that it "was said to be low." If the patient's basal metabolic rate is known to be low, it should be raised by means of scientific administration of definite amounts of a standard brand of thyroid and frequent determinations of the basal metabolic rate should be made in order to keep the rate somewhere between minus 10 and zero. Another type of therapy mentioned is the use of capsules of dinitrophenol. It should be apparent to every one that this type of therapy should be abandoned. The risk of toxic effects, particularly the formation of cataract, is too great to warrant the use of such a dangerous drug. Another type of therapy mentioned is the use of solution of posterior pituitary. There is absolutely no basis for use of this substance in this case. Use of antuitrin and antuitrin-S is also open to question.

There is only one good way of approaching simple obesity and that is by means of diet. A well planned regimen for reduction of weight, such as has been outlined by Strang and Evans (*Treatment of Obesity with Low Caloric Diet, THE JOURNAL*, Oct. 10, 1931, p. 1063) should be tried. Regardless of the fundamental cause of obesity in different cases, the fact remains that food is the only source of fat and that the only way to prevent the deposition of fat is by restricting the patient's caloric intake. Failure following the use of a rigid regimen for reduction of weight is virtually unheard of and certainly this is the first and most important procedure to be tried in the case described.

IDE TEST FOR SYPHILIS

To the Editor:—What is your opinion on the value of the Ide test for syphilis as compared with the Wassermann test? Where can the necessary antigen be obtained? M.D., New York.

ANSWER:—Sobei Ide and Tamao Ide of Tokyo, Japan, reported on their test in the *Journal of Laboratory and Clinical Medicine* (21:1190 [Aug.] 1936) and also in the *Klinische Wochenschrift* (15:973 [July 4] 1936). Since that time little has appeared in the English literature. An article appeared in the *Philippine Islands Medical Association Journal* (16:609 [Oct.] 1935) by Quisumbing. This was abstracted in *THE JOURNAL* Jan. 30, 1937, page 428. Another article appeared in the *Bulletin de la*

Société française de dermatologie et de syphiligraphie in December 1937, page 2101, abstracted in *THE JOURNAL* March 26, 1938, page 1067, by Demanche and Ségall, who employed Ide's test on 295 subjects, 226 of whom had treated or untreated syphilis in different stages. Results were compared with the Wassermann, Kahn and Meinicke tests. They concluded that the Ide test is less scientific than the other tests and less accurate because of difficulty in reading. Great caution in the use of the newer tests for syphilis has also been stressed in a recent current comment in *THE JOURNAL* 110:1373 (April 23) 1938. For the present, therefore, the test cannot be considered as a substitute for the standard methods and if used must always be controlled by other recognized laboratory procedures.

PRIMARY SYPHILIS AND MARRIAGE

To the Editor:—Over a year ago a patient presented himself with a lesion on the penis which was diagnosed by dark field examination as a primary syphilitic lesion. Treatment was immediately instituted along the plan suggested by the Cooperative Clinical Group of the United States Public Health Service, Stokes, Schamberg, Cole and others. The arsenicals and bismuth compounds were given in alternating courses as well as in combination, and the patient was advised to stay under treatment for at least seventy weeks or a year and a half as advised by the committee. What assurance can I give this patient at the end of the seventy weeks as to the certainty of his being cured? His serologic reaction was never positive. Would the indulgence in alcoholic beverages interfere with or retard the efficiency of the treatment? If there is a negative reaction after one year from the time treatment is finished, would it be advisable for him to consider marriage, and if so when could marriage be considered?
M.D., Pennsylvania.

ANSWER:—The chances of the patient's being cured are very good if his serologic reaction has never been positive. In other words, the patient has had a case of seronegative primary syphilis. It is felt that the use of alcoholic beverages interferes with the efficiency of antisymphilitic therapy.

At the end of one year it is advised that a lumbar puncture be done, and a Wassermann test should be taken every two months. If the tests have all remained negative for one year after all therapy has been discontinued, the test may be taken every six months for the succeeding year. At the end of the second year there should be a thorough physical examination, including a careful check on the cardiovascular apparatus.

Three and one-half years after he contracted syphilis, it would probably be safe for him to marry. He should consult his physician for a general physical examination once a year, however, as well as for a serologic check-up. This means that the patient should wait for two years after the stopping of treatment before considering marriage. The marriage would be dependent on a negative physical examination, a negative lumbar puncture and a negative check-up of the cardiovascular apparatus.

ABDOMINAL PAIN FROM EXERCISE AND APPENDICITIS

To the Editor:—As public school physician I have to pass on all excuses from physical education, in high school, and frequently get a story from the girls as follows: They complain of pain in the right lower quadrant after running and say they want to be excused because of appendicitis. Frequently they have been told by their family physicians that they have a chronic appendicitis. Examination of such cases is always negative. I should like to know the mechanism of pain in the abdomen following exercise. We all have "catches" after running when not in training. Can this type of pain arise from an appendix or is it muscular? My feeling has been not to pay too great attention to this as an excuse from the ordinary gym class. Am I thus causing some child to have an attack of appendicitis?

R. NED WHITE, M.D., Springfield, Mo.

ANSWER:—The occurrence of abdominal pain following exercise is common but the explanation of this phenomenon is not easy. Dr. J. L. Capps, in his book on pain, says that "the external surface of the body can be stimulated at will by painful stimuli and the location of the pain so induced can be readily determined. But within the cavities of the body a given stimulus may produce no sensation whatever in the region of the stimulus or it may give rise to painful sensations at a distant point."

Because of the fact that nearly all persons who complain of this type of pain are perfectly healthy, no underlying organic pathologic condition is involved in its production. Exactly what does produce the pain is at present a matter of speculation and inductive reasoning. It has been charged to distention of the splenic and hepatic capsules, anoxemia of the intestinal muscles, anoxemia or spasm of the diaphragmatic muscle, and other causes. It is likely that some or even all of these causes may be correct but experimental proof is lacking at the present time.

Such pain is not produced by chronic appendicitis or by other organic disease. Appendicitis may exist in a person who

has such pain but a diagnosis cannot be made on the occurrence of pain following exercise. There must be other evidence.

While there may be controversy about the direct cause of appendicitis, there is no evidence to show that exercise produces it.

TINCTURE OF IODINE AND MILK

To the Editor:—I have been informed that raw milk may be rendered as safe for human consumption as if pasteurized by the addition of nine drops of tincture of iodine to each quart, the mixture being allowed to stand for six hours. This idea has been refuted also by a good authority. Will you be good enough to inform me whether there is any scientific basis for this procedure?
HAROLD J. HARRIS, M.D., New York.

ANSWER:—Four one quart samples of certified raw milk, which had previously been treated to a sediment test, were plated to determine the bacterial count.

Each bottle was then treated with nine drops of tincture of iodine (44 parts per million of free iodine), allowed to stand six hours, and the samples were again plated. The results are given in the table.

Results of Test

Sample Number	Bacteria per Cubic Centimeter		Place of Storage During Six Hour Period
	Untreated Sample	Sample Treated with Tincture of Iodine	
1	36,000	47,000	Icebox, 8 C.
2	33,000	71,000	Icebox, 8 C.
3	390,000	250,000	Icebox, 8 C.
4	310,000	420,000	On table in laboratory, 22 C.

These results show that the addition of nine drops of tincture of iodine to a quart of milk has little or no inhibiting effect on the growth of bacteria in milk after six hours.

PULSE PRESSURE

To the Editor:—Please explain the following sphygmomanometric paradox: In a man aged 45, with no apparent circulatory abnormality, the first sound over the brachial artery was heard at 175 mm. of mercury, at which point the column also regularly began oscillations. This low pitched sound continued to be heard until the mercury registered 110 mm., at which point the sound was greatly intensified and the pulse at the wrist was felt for the first time. Sounds completely disappeared at 50 mm. What should be considered the systolic pressure? I can usually feel the radial pulse a little below the point of beginning oscillation and stethoscopic first sound, but how can the gap of 65 mm. be explained?

M.D., New Jersey.

ANSWER:—Probably the low pitched sound heard during the compression interval from 175 down to 110 mm. was the result simply of a forceful pulse thudding against the closed artery under the cuff. This occurs not infrequently, especially if the arm is thin and the pulse strong. Rarely the difficulty arises as a definite source of confusion. It can be obviated by the use of a double cuff or by two cuffs, one above the other, with auscultation just below the lower cuff.

It is much less likely that this is an instance of true auscultatory gap. When there is an auscultatory gap the sounds are clearly heard above the gap, at least for a few millimeters, and then there is a dulling or entire absence of the sounds for 30 or 40 millimeters with a return of the sounds below this level. Such a gap is rare except in essential hypertension or aortic stenosis.

ACACIA IN HEMORRHAGE AND SHOCK

To the Editor:—Of what value is acacia solution in hemorrhage and shock, the acacia solution being the standardized 6 per cent solution in dextrose, in a total quantity of 500 cc. How much time should be consumed in the administration of such a quantity? In cases coming to necropsy in which acacia solution has been used, what is the gross and microscopic appearance of the liver?
M.D., Illinois.

ANSWER:—Acacia solution is of great value in the treatment of severe hemorrhage and shock and should always be available at short notice. It is remarkable to observe the rapid improvement of the patient who is practically pulseless and has a low pressure with the intravenous administration of acacia solution. Acacia solution with sodium chloride is preferred. The standard commercial ampule is 100 cc. and contains 30 Gm. of acacia and 4.5 Gm. of sodium chloride. Four hundred cc. of freshly distilled sterile water is added to this solution, so that for the final dilution of 500 cc. each hundred cubic centimeters contains 6 Gm. of acacia and 0.9 Gm. of sodium chloride. In an exsanguinated patient, when blood is not immediately available, this solution may be given rapidly. One thousand cc. of acacia solution in from thirty to sixty minutes is not too fast in the desperate case.

The liver, as part of the reticulo-endothelial system, plays a part in the elimination of the acacia. A competent pathologist, with whom this subject has been discussed, has observed no gross or microscopic changes in the liver after the use of acacia, although this question has not been finally settled. For days or weeks after the administration of acacia, the microscopic appearance of the blood is so altered that a leukocyte count is difficult or may be impossible.

THRESHING FEVER, OR WHEAT MILLER'S ASTHMA

To the Editor:—In my rural practice, during the threshing season, I encounter a condition commonly called "threshing fever." It is characterized by a more or less sudden onset, malaise, severe headache, high fever—from 102 to 105 F.—chest pains, accompanied by a constricted feeling across the chest, short and rapid respirations accompanied by an irritating cough, scanty expectoration, at times blood tinged, and a pulse rate of from 90 to 110. The course of the disease is short, the patient usually recovering in a period of from seven to ten days with no apparent after-effects. The treatment has been symptomatic. The condition seems to be that of an acute pneumonitis due to the inhalation of the dust particles incidental to threshing. I have been unable to find any reference to this condition in the literature.

M.D., Pennsylvania.

ANSWER.—In the literature the condition described as "threshing fever" is referred to as wheat millers' asthma or as grain threshing bronchial catarrh. Several theories concerning its etiology can be advanced. It has been elaborately described by W. W. Duke in two articles (*J. Allergy* 6:568 [Nov.] 1934; *THE JOURNAL*, Sept. 21, 1935, p. 957). He attributes the condition to irritation from the serrated hairs found in the wheat dust.

Other theories are presented in Kober and Hayhurst's *Industrial Health* (Philadelphia, P. Blakiston's Son & Co., 1924, p. 214). Kober attributed the condition either to intoxication from the grain protein or a contained fungus or to irritation from inorganic dust present in the grain. The possibility of a pyococcic bronchitis on an allergic respiratory response must be considered.

RADIOSENSITIVE AND RADIORESISTANT TUMORS

To the Editor:—A man, aged 48, has a growth on the side of the nose about the size of a grain of corn. The pathologic report by competent pathologists was adenocarcinoma, radiosensitive, type 2. Radium was applied. Two and one-half months later there was some evidence of a malignant growth being present. The entire area was resected again and sent to the same pathologist. This time he reported it to be basal cell epithelioma, radioresistant. Will you advise whether an adenocarcinoma, radiosensitive, type 2, will change to basal cell epithelioma, radioresistant, within two and one-half months and what part the radium would play in this change?

M.D., Georgia.

ANSWER.—The problem of grading tumors in relation to radiosensitivity and radioresistance is an extremely difficult one and by no means settled. The morphologic changes in a tumor that are caused by radiation are also difficult to interpret, even by those with great experience in this field. In the particular example cited, the answer is in the negative.

There are two factors which have to be considered: One is the fact that the pathologist had an opportunity to examine the entire specimen the second time, as compared with the examination of only a limited portion of it in the beginning. The second factor is the change produced in the tissues by irradiation.

OPERATION FOR STERILITY IN MALE

To the Editor:—A man, aged 46, was sterilized about eight years ago by ligation of the vas deferens, and a small piece of the vas was removed between the points of ligation. He now is married again and wishes to have the sterilization corrected in order to become the father of a child or two. What type of operation is advisable to establish continuity of the vas deferens, and what are the chances that it will be successful? The man is normal otherwise and there is no history of epididymitis or orchitis.

M.D., Minnesota.

ANSWER.—While it is possible to unite the two ends of the vasa, the most sensible operation would be that of epididymo-vasostomy just as for occlusion after an epididymitis. The operation proposed by Hagner, a description of which can be found in any book or article dealing with sterility in the male, has been the most successful. Whichever method is employed, it is essential at the operation to test the patency of the vasa, and it would be advisable beforehand to aspirate the testicle to see if it produces spermatozoa. The prognosis is poor no matter what procedure is employed and only about 30 per cent of operations are successful when judged by finding five spermatozoa in a condom specimen after the operation. The operation itself is not dangerous and, if properly done, can do no harm even if unsuccessful. Occasionally it may be repeated later on.

GAS HEATERS

To the Editor:—Might heating with unventilated radiant heaters supplied with natural gas be considered unhealthy and, if so, why?

L. L. HILL JR., M.D., Montgomery, Ala.

ANSWER.—Tens of thousands of the radiant type of gas heaters are in use throughout the country without attracting special attention as creating injurious exposures. The use of natural gas is preferable to artificial gas, since the former usually contains little or no carbon monoxide. Under fortuitous circumstances any gas heater, through defects, may become dangerous and carbon monoxide gas may be produced through improper combustion, and disaster may rise. Natural gas, while ordinarily nontoxic, is a simple asphyxiant and may replace ordinary atmospheric oxygen to the point at which life will not be supported. If turned-on gas in a radiant heater is unlighted, if the flame is blown out or it is otherwise discharged in any confined space, such as a room, a potential exposure naturally exists. A vented heater is desirable and when they function properly the prospects of injury are low.

PEDICULOSIS AND ETHYL ACETATE

To the Editor:—Please supply information on the use of ethyl acetate in the treatment of pediculosis capitis.

R. N. MONFORT, M.D., Onaway, Mich.

ANSWER.—No mention of ethyl acetate in the treatment of pediculosis capitis has been found in the medical literature of the last few years. If such mention has been made, it may be hidden so that search of the index does not reveal it.

Ethyl acetate, acetic ether, or vinegar naphtha is a volatile liquid of fruity odor which causes a temporary burning sensation when applied to the skin and some dryness of the skin thereafter. The fact that it is inflammable is an objection to its use undiluted. The method of treatment in favor at present is the application of a thick layer of petrolatum containing 5 per cent benzene in the effort to smother the lice. After this has been accomplished the petrolatum is removed, the scalp washed and a dressing of hot vinegar applied for a time to loosen the nits, which can then be removed with a fine comb. It is possible that acetic ether suitably diluted would accomplish these objects more easily.

COITUS DURING PREGNANCY

To the Editor:—There is an underlying current of thought that would substantiate the idea that sexual intercourse during pregnancy is detrimental to the child to be and that it may cause idiotic conditions. Is this true? If, so, through what means? If these are incorrect ideas, what is the reason for some believing them to be so? M.D., California.

ANSWER.—There are no facts to substantiate the idea that sexual intercourse during pregnancy is detrimental to the child or that it may be responsible for idiotic conditions. There are a few ancient superstitions on this score which have proved to be groundless.

TERMINOLOGY OF HUMAN AND DOG TAPEWORMS

To the Editor:—A student maintains that *Diphyllobothrium latum* and *Diphyllobothrium latus* are one and the same parasite, while I contend that they are two distinct species, one, *Diphyllobothrium latum* being the fish tapeworm infesting man and the other being the fish tapeworm infesting dogs. For a long time it was common to consider the two as identical. However, I am quite sure that the most recent work has shown the two to be distinct. Your answer and any references that you can give me on the subject will be welcomed.

M.D., Minnesota.

ANSWER.—*Latus* and *latum* are respectively the masculine and neuter Latin forms of the specific name of the broad or fish tapeworm of man. The fish tapeworm of the dog and cat has generally been called *Diphyllobothrium mansoni* (Cobbold) but recently Neveu-Lemaire in his *Traité d'helminthologie* revived an older name, *Diphyllobothrium erinacei* (Rudolphi) for it.

PATRICK'S SOLUTION FOR NERVE INJECTION

To the Editor:—Can you furnish the formula for Patrick's solution, which is an alcohol solution for injecting nerves?

W. T. THORNTON, M.D., Missoula, Mont.

ANSWER.—The formula given by Patrick in *THE JOURNAL*, Jan. 20, 1912, page 155, is:

	Gm. or Cc.	gr. ii
Cocaine muriate	11	5 iiiss
Alcohol	13½	5 ss
Aqua destillata, q. s.	15½	

This solution is intended only for injection of the trigeminal nerve and should not be used for mixed or motor nerves unless it is intended to cause paralysis.

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad. of
College of Medical Evangelists.....		(1937, 2) N. B. M. Ex.
Georgetown University School of Medicine....	(1935),	(1936) N. B. M. Ex.
Rush Medical College.....		(1934) N. B. M. Ex.
Washington University School of Medicine.....		(1934) N. B. M. Ex.
University of Pennsylvania School of Medicine.....		(1936) N. B. M. Ex.

Book Notices

The Principles and Practice of Clinical Psychiatry. By Morris Braude, M.D., Associate Clinical Professor of Psychiatry, Rush Medical College, The University of Chicago. Cloth. Price, \$4. Pp. 382, with 7 illustrations. Philadelphia: P. Blakiston's Son & Co., Inc., 1937.

Book after book has been written for the student of psychiatry. Most of them are thoroughly similar, thoroughly accurate and, for the most part, well written. It is somewhat difficult to see, perhaps, exactly what this book can accomplish which previous works on psychiatry have not done. One favorable feature, however, which might be pointed out is the fact that the dynamics of the various mental diseases are more largely dwelt on than the merely descriptive features. For instance, in the discussion of dementia praecox much space is devoted to an attempt to explain why one type might be so apathetic and why the symptoms take the form that they do. For adopting this rather novel point of view the author deserves praise.

The book begins with an excellent introduction, after which each one of the usual psychiatric entities, such as manic-depressive psychosis, dementia praecox and organic and toxic psychoses are taken up in detail. The conventional presentation is largely adhered to in that the definitions, the etiology, the symptomatology and the differential diagnosis are simply and competently summarized. A page or two is devoted to each of the more rare conditions, such as lead encephalopathy, and not much fault can be found with the actual material presented. There are a number of excellent case histories, which in many instances present the symptomatology and behavior of the case better than the descriptions included in larger, older and more detailed textbooks. For a small summary of psychiatry brought down to date and incorporating dynamic thinking, the volume would fill the bill. Little criticism can be made of the style. There is a short bibliography as each chapter ends, and brief chapters on simulation or malingering, mental deficiency and psychoanalysis conclude the book. The chapter on neuroses and psychoneurosis, which was usually so weak in earlier textbooks, is not much better in this volume. It is an excellent handbook and there seems to be little in it that would prevent it from serving as an elementary textbook for medical students of psychiatry.

Apoplexies viscérales séreuses et hémorragiques (Infarctus viscéraux). Par Raymond Grégoire, professeur à la Faculté de médecine de Paris, et Roger Couvelaire, chirurgien des hôpitaux de Paris. Paper. Price, 50 francs. Pp. 181. Paris: Masson & Cie, 1937.

The authors made an exhaustive study of visceral infarcts (apoplexies) from the clinical point of view. They point out that misinterpretation of symptoms the result of visceral infarctions frequently result in tragedies and loss of life. The clinical entities under discussion tax the diagnostic acumen of both physician and surgeon. The authors' ingenious experiments on lower animals in their approach to a possible solution of the problems presented yielded some interesting conclusions. First, the authors produced anaphylactic shock by artificial means on laboratory animals. From these they were able to conclude that experimentally produced anaphylactic and anaphylactoid shock is followed, essentially, by the same results observed in disturbances of the vegetative nervous system occurring in human beings under similar conditions. Careful comparisons are drawn of the results obtained from animal experimentation with those of clinical patients. While the authors do not claim that their conclusions are final or incontrovertible, their deductions seem logical. For example, apoplexies observed within the abdomen of human beings bear a striking resemblance in symptomatology to the apoplexies artificially produced in laboratory animals. The authors point out that hemorrhagic pancreatitis, intestinal infarcts and tubo-ovarian apoplexies manifest themselves at the onset by symptoms of shock, lipothymia and a decided fall in the blood pressure. These phenomena are accompanied by venous distention. These the authors attribute to "shock of intolerance." Similar manifestations were noted in the animals experimented on. The question the authors ask is: Are visceral apoplexies the result of primary alterations in the vegetative nervous system which react in an

abnormal manner on the vascular apparatus? If that is so, a new chapter is opened in pathology. The therapeutic indications garnered from a study of the symptoms produced by serous and hemorrhagic apoplexies of the intestine the result of experimental and clinical data are given. Supposing the surgeon in charge of a case is an experienced technician, the problem reduces itself to the question as to What procedure is best in the interest of the patient? If, as the authors believe, such apoplexies are the manifestations of "shock of intolerance," one must determine how much damage the existing neuro-vegetative disorientation has produced on the particular viscera affected. Two urgent indications are postulated: First, the treatment of the shock syndrome per se. Second, immediate verification of the degree of alteration produced in the structure of the intestine. The authors point out that the symptom complexes under consideration may disappear spontaneously. The keynote of procedure is to combat low blood pressure, the result of shock, by sodium thiosulfate or epinephrine. Case histories cited show how spontaneous recoveries may take place in the form of infarction. It is pointed out that the use of general anesthesia by itself may be a curative factor by suppressing nervous impulses. Clinical histories support the thesis presented. The reader will find chapter 4, on serous and hemorrhagic apoplexies of the pancreas, when read in conjunction with chapter 5, on serous and hemorrhagic apoplexy of the lung and chapter 6, dealing with serous and hemorrhagic apoplexy of the uterus, interesting and illuminating. The work is completed by a discussion of spontaneous serous and hemorrhagic apoplexy from the clinical and anatomic points of view. For the advanced student as well as for the diagnostician and surgeon, the work is highly recommended for its intrinsic value as a classic contribution to the physiopathology and treatment of these rather common and obscure clinical entities.

The Patient and the Weather. By William F. Petersen, M.D. With the assistance of Margaret E. Milliken, S.M. Volume IV, Part 2: Organic Disease. Hypo and Hyperthyroidism, Diabetes, The Blood Dyscrasias, Tuberculosis. Cloth. Price, \$11. Pp. 729, with 380 illustrations. Ann Arbor, Michigan: Edwards Brothers, Inc., 1937.

In spite of the fact that several other large volumes have already appeared in this series, in this volume Dr. Petersen begins to approach the conditions which are much more to the interest of the general medical man than were those discussed in previous volumes. While it is true that heart disease has been touched on previously, the present tome deals with tuberculosis and with a number of other disorders which arise more often in the experience of the general practitioner and internist than do the mental diseases and other conditions to which were devoted much of the space in the preceding volumes. Dr. Petersen is interested in correlating the general trend of climatic change with disease. Fluctuation in temperature, humidity, pressure and other weather changes are correlated day by day with many bodily variations due to disease. The reason Dr. Petersen thinks these might be of importance is that he is of the opinion that changes in pressure in the capillary bed definitely occur with changes in the weather. This he has demonstrated to some extent in previous volumes, and while perhaps the results are not absolutely conclusive, they are definitely indicative of a relationship which should be thoroughly studied. The present volume is perhaps no more convincing or strictly practical than the preceding volumes. Its organization is not quite as systematic as the first part of the present volume, (volume IV, part 1), so that in the part now being reviewed one finds discussions of the cretin, the hyperthyroid and the thyrotoxic cases, followed by a mention of mortality rates, beginning with exophthalmic goiter and carrying over into postoperative tetany and into racial distribution of goiter. Perhaps in a broad sense all these have a bearing on the problem and as one reads through the volume, not an easy task, one is able to understand why the author has run these conditions together, even though, discretely, the titles may not seem to be closely interrelated. The reason, apparently, is that they all depend on endocrinologic functions, which in turn determine and depend on changes in the blood vessel capacity. With these changes in blood vessel capacity, due to the weather, the author attempts to show that there are acute exacerbations of symptoms or diminution. This seems particularly to be true

in diabetes. Changes in blood sugar in several cases which the author presents correlate quite highly in the individual case with changes in climatic conditions.

In the present volume, as in those previously published, there are numerous case histories, some given in considerable detail, others summarized rather briefly. In most of them are complex charts giving the changes in the various bodily functions as they are measured in the hospital, showing at the same time the various meteorological changes which were recorded for the same date. The charts of most of the exacerbations and clinical changes do not superimpose exactly on the main features of the weather brought out by Petersen, yet there is a close enough relationship in these cases of thyroid disease and pancreatic disease to say that in these disorders the point is as well made as it has been in the nervous, mental and other conditions which were analyzed in previous volumes. The blood dyscrasias too are presented in some detail, but the case material here does not seem to be as strongly demonstrative of inter-relationship between the symptomatic change and the weather. A third part of the book is devoted to a discussion of the relation of the weather to tuberculosis. A gross relationship of weather to pulmonary conditions, of course, has been admitted for generations, although some doubt has from time to time been cast on definite statements as to the exact nature of the relationship. Most of the studies in the past have tended to show that changes in climate continuing over periods of time have an effect, good or bad, on pulmonary tuberculosis. Petersen shows that unitary climatic changes have an effect.

There does not seem to be much of a practical nature brought out in the book, the author's thesis being purely one of research based on the hypothesis that symptomatic conduct is predicated on environmental changes such as those occurring in the weather. There are a number of splendid illustrations of pathologic material to illustrate the many case histories, and the bibliography at the end of each discussion of a group of pathologic entities is excellently gathered and shows wide reading and study. This volume, like the others, is not one which would add much to the armamentarium of the physician who must treat his patients immediately. For the specialist in endocrine function, in the blood dyscrasias or in tuberculosis, there would seem to be a need for reading the part of this book devoted to his specialty to give him Petersen's point of view and possibly to stimulate him to further thought in this interesting field.

Emotional Adjustment in Marriage. By Le Mon Clark, M.S., M.D., Assistant in Obstetrics and Gynecology, University of Illinois College of Medicine. Cloth. Price, \$3. Pp. 261. St. Louis: C. V. Mosby Company, 1937.

With the rapid clinical development of marriage therapy, a book on emotional adjustment in marriage has long been awaited. There is no doubt that marriage is one of the most important problems that confront the human race today. Even the actual excuse for its existence is under fire. Clinicians are anxiously attempting to analyze the social factors which make for good marriage, conditions that have been statistically studied by Dickinson, Hamilton and others for the purpose of finding out attitudes, interests and sources of conflict in marriage, and the psychiatrist has gone into considerable detail to understand where the dynamisms possible for success and failure in this relationship are built up. The gynecologist has a place in marital adjustment. Practically speaking, he is probably called on more often to advise mismatched couples than any other professional individual. His knowledge of the generative organs of the female, which after all offer more chances for pathologic change than do those of the male, often makes him able to give some advice which will enable a couple seemingly mismatched to make a readjustment. One would hope from the title that Clark would develop a volume beyond mere mechanics, but one is doomed to disappointment. The chapters are, of course, devoted to a discussion of normal sex adjustment, to the concepts of morality, and advice is given as to the conduct of the honeymoon and the period after the honeymoon. But Clark's vision is limited. He probably has no concept of the various fears, abnormal attachments, social obligations and adjustment mechanisms which occur in even the most apparently normal lives. This book is largely conventional. Much of it apparently is culled from literature in the anthropologic

field or that of old fashioned sexual psychology as exemplified by Havelock Ellis. While one cannot condemn such literature, it is rather unfortunate to find that recent dynamic studies in the fields of sociology and psychiatry have been largely neglected. Since the larger clinics, particularly those connected with domestic relations courts, find that the most important conflicts are in the psychologic sphere rather than in the physical, this book cannot be by any means the answer to the problem. It is fairly well written, although not very well organized. It is neither specific enough to be of much value to the newly married couple, nor general enough to serve as a guidebook for the expert who wishes to interest himself in this field.

La malaria en Guatemala: Estudio epidemiológicos y desarrollo de la campaña antipalúdica. Por M. Gagliardo Mira. Paper. Pp. 54, with 7 illustrations. Rome: Stamperia Moderna S. A., 1936.

To the south of us, in Central America, lies Guatemala, a land of many contrasts and many public health problems. Along the coasts of the Atlantic and the Pacific the territory is flat and characterized by the lush tropical growth commonly associated with tropical diseases. Much of the interior is mountainous, with many citizens residing in altitudes of 10,000 feet or more. In these volcanic ash covered highlands live the majority of the Mayan Indians, who make up 85 per cent of the population. In the lowlands, malaria constitutes an omnipresent public health problem. In the highlands, the absence of sufficient iodine in volcanic soil paves the way for an enormous incidence of goiter. Almost universally in this land, parasitic worms infest mankind and are tolerated as a no less essential part of the body than are the fingers or ears. The present publication deals with epidemiologic studies of malaria and the inauguration of the present antimalaria campaign.

Sections of this report are devoted to mortality and morbidity statistics, splenic and parasitic indexes, the geographic and biologic distribution of mosquitoes, the influence of local factors, the distribution of various clinical forms of malaria, the details of antimalaria campaigns, the difficulties of the application of quinine therapy and the creation of public health measures directed to the application of control provisions. About the year 1931 the splenic index along the Atlantic Coast lowlands suggested an incidence of malaria in excess of 91 per cent; in nearby areas the parasitic index approximated 97 per cent.

Since the period of collecting material that led to this report, improvements have been made in the general public health situation in Guatemala, including malaria control. A national health building has been erected in Guatemala City and additional studies have been made as to the distribution of mosquitoes. It has been determined that contrary to previous views malaria-bearing mosquitoes may be found at much higher elevations than the two and three thousand foot elevations heretofore regarded as the upper limit of flight. All in all, this publication reflects the intelligent, far-flung efforts of a disease-ridden country to protect its people through high types of public health conservation measures.

Surgical Anatomy of the Head and Neck. By John Finch Barnhill, M.D., F.A.C.S., LL.D. Introduction by Paul S. McKibben, Professor of Anatomy in the School of Medicine, University of Southern California. Cloth. Price, \$20. Pp. 921, with 431 illustrations. Baltimore: William Wood & Company, 1937.

This monumental work, based on the author's long experience as a teacher of otolaryngologists in graduate courses, not only is a colloquial, interesting and accurate guide for surgical dissection of the head and neck but also epitomizes the steps of selected types of operative procedures, describing them as the various structures are reached. Numerous variations and anomalies are pointed out, notably in the cranial venous channels, the sphenoid sinuses, the temporal bone and the cervical circulation. A remarkably clear account of the cranial nerves is included. The latter half of the book comprises 431 full page illustrations and diagrams, nearly all made by Dr. Barnhill from his own dissections with the utmost accuracy of detail and accompanied by long explanatory captions as well as references to the preceding lectures. Thus they may be reviewed quickly from the captions or studied systematically in connection with the text or as a guide to work on cadavers. The index, while brief, is adequate. The proofreading has missed a number of transposed letters and misspellings of proper names, requiring

correction in later editions. The type is large and the typography and format are otherwise excellent. Lacking the lithographic elegance of professional illustrators, these drawings, like those of Mosher and Jackson, are more valuable because they are made by one who knows what to look for and emphasize. Dr. Barnhill deserves special commendation for his indomitable courage in completing his textbook and drawings during long months of disabling and painful illness. This book will be invaluable to all otolaryngologists and students of that special field. It contains many suggestions, particularly as to surgery of the neck and of the cranial cavity and sensory nerves, of great importance to general surgeons. Dedicated to the Research Study Club of Los Angeles, which underwrote publication, this is a fitting culmination to Dr. Barnhill's long and active life as a practitioner and teacher.

The Biology of Human Conflict: An Anatomy of Behavior, Individual and Social. By Trilant Burrow, M.D., Ph.D., Scientific Director, The Lifwynn Foundation, New York City. Cloth. Price, \$3.50. Pp. 435. New York: Macmillan Company, 1937.

The author of this volume is one of the lesser known but nonetheless intense students of the problems of human behavior. For many years he has been conducting, in as scientific a fashion as possible, a small laboratory in New York, where he is attempting to demonstrate—apparently with some degree of success—the fact that no single school of psychoanalysis or of its near relatives is entirely satisfactory. In a previous work Burrow showed that the domination of the analyst over the patient was anomalous and that for therapeutic and investigative purposes the relationship might well be reversed or, better still, that there should be no domination by either. This particular type of psychoanalysis he calls phyloanalysis, because it is carried on with a number of individuals who are coordinate in analyzing one another in order to attempt to show racial (in the larger sense of the human race) tendencies. In the present volume he attempts to tie together a number of observations which he has made in order to demonstrate this unique type of behavior dynamics.

The application of a new understanding of neurotic mechanisms, which Burrow brings to the reader in this book, shows its application to a number of different spheres, such as legal medicine, in which the concept of right and wrong is broken down in a fashion rather unique and apparently quite level headed, or as in neural physiology, wherein the internal environment of the individual is demonstrated to have quite a bearing on his thinking processes and his ability to avoid neurotic behavior and tendencies. The analysis of much of the psychologic thought found in modern psychopathology is critically reviewed and, according to the author's tenets, definitely praised when deserving and criticized when not. Symbol formation is deeply studied, analyzed and shown to be of extreme importance. Burrow's concept of the symbol is much broader than that of Freud, and much of the action and interaction of the individual is shown to be dependent on it. The volume contains an immense amount of meaty discussion. The dynamics which Burrow discusses is complex yet in his presentation seems to have an existence in fact, and throughout the volume a good understanding of the general field of psychopathology is demonstrated. There are many statements about which the conventional psychoanalyst or perhaps the conventional psychiatrist will be likely to differ.

There are parts of the book which are very difficult to read because of the author's style. The sentences are involved and he uses a vast vocabulary, which he attempts to render more accessible by a short and none too clear glossary at the end of the book. In his introduction, Burrow points out that it is impossible to divorce emotional from the intellectual understanding of any problem. While a man may be intellectually willing to accept certain facts, his whole emotion and symbolism will prevent him from being an adherent to the school which presents those facts because of his emotional background. In this light Burrow implies that the attitude of those who criticize his work because of its rather poor readability is like that of the uncooperative Freudian patient toward the analyst. In this he is not correct. There seems to be no question that much of his ideation is of importance in aiding psychiatric thinking and the

understanding of the workings of the mind, but there is a way of overlooking the fact that Burrow's style is cumbersome and his terminology intricate. Nevertheless, the existence of the phyloanalytic school of psychopathologic thought might just as well be accepted and studied. It is questionable whether it will supplant the better understood schools, but it is active, logical and in many ways scientific.

Das Arsenvorkommen bei Reichenstein und die sog. Reichensteiner Krankheit. Von Prof. Dr. Johannes Käthe, Direktor des Staatl. Meznal-Untersuchungsamts, Breslau. Veröffentlicht von der Schlesisch-Gesellschaft für vaterländische Cultur. Paper. Pp. 24, with 12 illustrations. Breslau: Ferdinand Hirt, 1937.

This little booklet is largely now a historical and toxicologic document, owing to the fact that for the last nine years development of a pure water supply has caused the disappearance of the "reichenstein sickness," which, it came to be known, was nothing more or less than arsenical poisoning, of which many cases occurred in this region owing to the arsenic contamination of the drinking water as well as to occupational exposure to arsenic-containing ore. In addition to the usually described symptoms of chronic arsenical poisoning, it is of particular interest to note the frequency with which malignant neoplasms developed from arsenical warts, one local physician asserting that half of all the patients suffering severely from the Reichenstein sickness died of carcinoma.

A Monograph on Veins. By Kenneth J. Franklin, D.M., M.R.C.P. University Demonstrator of Pharmacology, Oxford. Cloth. Price, \$6. Pp. 410, with 46 illustrations. Springfield, Illinois, & Baltimore: Charles C. Thomas, 1937.

This is a truly remarkable treatise on veins by a scholar, an original investigator and a curious seeker of truth. Such a monograph on veins has never before been produced in English. The author has been actively engaged in research on the venous system for many years and has now made available to others a vast literature, all of which has a definite bearing on physiologic, pathologic and clinical problems. A short, concise historical sketch on the development of knowledge with regard to the veins is followed by chapters on the embryology, the functional anatomy, the valves of veins, the circulating volume of blood, the comparative anatomy of veins, the venules, the absorption and diffusion from veins, the innervation of veins, their relation to chemical stimuli, the heart and venous return, the effects of hydrostatic pressure and muscular contractions, venous pulsation, respiration and venous return, venous pressure, and the movements of blood in the veins. Two short chapters are added on clinical applications. It is obvious from this summary of contents that the review is primarily intended for those engaging in experimental and clinical research. In fact it is the best and most timely presentation of the anatomy and physiology of circulation, with special emphasis on the venous side. Perhaps one might wish for a broader exposition of the clinical problems encountered because, after all, the aim of all research is a better understanding of and a more logical approach to human ailments. Nevertheless, the author has succeeded in formulating from a scattered literature an integrated whole supported by a complete bibliography. The printing and illustrations are excellent. The monograph will be a source of keen pleasure to every physician who tries to look for fundamental knowledge and not for short cuts in medicine.

Veröffentlichungen aus der Konstitutions- und Wehrpathologie. Herausgegeben von L. Aschoff, W. Ceelen, W. Koch und P. Schürmann. Geleitet von W. Koch. Heft 40. Band IX, Heft 3: Bericht über das Ergebnis der Obduktion des Gorilla Bobby des Zoologischen Gartens zu Berlin: Ein Beitrag zur vergleichenden Konstitutionspathologie. Von Prof. Dr. Walter Koch. Paper. Price, 2.50 marks. Pp. 36, with 17 illustrations. Jena: Gustav Fischer, 1937.

This is a rather lengthy report of the postmortem examination of a male gorilla about 10 years old, the principal changes being found in the appendix and lungs. An acute attack was superimposed on an old appendicitis, with perforation and periaepical abscess; in the lungs, hemorrhagic edema was noted with the presence of lymphocytes. The pulmonary changes were thought to be due to the aspiration of water. The presence of calcium casts in the collecting tubules of the kidneys was especially stressed. The hypophysis, which weighed about twice as much as that of a human being, was considered enlarged, and the testes were undeveloped and atrophic, without evidence

of spermatogenesis. Since the gorilla was rather obese, adiposogenital dystrophy was considered. Though the necropsy report is interesting, the purpose of a special publication in pamphlet form is not quite clear.

Diagnosis and Treatment of Malignant Tumors. Syllabus for Postgraduate Course. Tumor Clinic, Stanford University School of Medicine. Paper. Pp. 82, with illustrations. San Francisco, 1937.

This syllabus, adopted by the Stanford University School of Medicine, is excellent. The only criticism found in the entire syllabus was under the heading "Public Education and Cancer." Speaking of the drive made by the American Society for the Control of Cancer in regard to lay education, the author observes, "One wonders whether such a drive is not likely to do as much harm as good in the present state of our ignorance regarding cancer." The syllabus covers the entire field of cancer and can be highly recommended as an outline for a postgraduate course. It would also be worth while for any one interested in the cancer problem to obtain this syllabus and read it carefully.

Miscellany

SPECIAL REPORT OF PNEUMONIA ADVISORY COMMITTEE TO SURGEON GENERAL, U. S. PUBLIC HEALTH SERVICE

Although a large amount of work has been done, particularly in the past two decades, on pneumonia and problems related to it, the disease continues to rank high among the common causes of death in this country. From the standpoint of the health of the community, one of the greatest recent advances has been the introduction of generally available facilities for rapid typing and the provision of certain specific therapeutic pneumonia serums by a few states and cities.

STANDARDIZATION OF TYPING SERUMS AND CULTURE COLLECTION

The classification of pneumococci as types I, II and III and Group IV by Dochez and Gillespie years ago and the later subdivision of the latter group into at least twenty-eight¹ additional specific types by Cooper and her co-workers has afforded important means of studying many of the problems presented by pneumonia.

To safeguard progress thus far made, it is essential that all typing serums produced be uniform as to their specificity. Adequate precautions should be taken by some governmental agency, and preferably the Public Health Service, to insure by suitable tests and other necessary means the strict specificity of all the diagnostic serums produced in or introduced into this country regardless of whether such serums are prepared for domestic or for foreign consumption. As an important corollary, a collection should be maintained of cultures of each of the types of pneumococci for which diagnostic serum is now available.

STANDARDIZATION OF THERAPEUTIC SERUMS

Methods of standardizing the potency of therapeutic antipneumococcus serums should be rapidly developed and made uniform. The application of specific serum therapy to type V, VII and VIII cases will be hindered and handicapped so long as the potency of these serums cannot be uniformly measured and some reliable recommendation made as to the size of the average dose needed. It is desirable in addition to cooperate with the League of Nations committee on the standardization of biologic products in an effort to establish reliable international potency standards for all antipneumococcus serums used for therapeutic purposes.

Manufacturers of serums for any type for which a standard has been set should be required to comply with the regulations and forbidden to dispense, by sale or otherwise, serums of such types for clinical use unless they comply with the regulations adopted. This matter might well be handled by the National Institute of Health.

1. Cooper considered types VI and XXVI so much alike that she combined them and called the resulting type type VI; in some instances this combination is referred to as type VIa and b. Recently other investigators have also regarded types XV and XXX as similar. There is not uniform agreement as to this, however.

PRODUCTION OF THERAPEUTIC SERUMS

Attention should be directed to improving the materials used and the methods and schedules of immunizing animals so as to increase the quantity of antibody produced and lower the cost. Investigations of antibody production in rabbits can be made in almost any suitably equipped laboratory. When work of this nature is carried out in horses, however, progress is necessarily slow. In consequence, to facilitate such studies in the latter animal it would seem advisable for the Public Health Service to give what advice, technical assistance and financial aid is possible to those public laboratories already engaged in the manufacture and distribution of antipneumococcus horse serums. There is also need of improving the methods of serum concentration and refinement, which might best be handled in those public laboratories already involved in such work and which possess the clinical facilities for adequate trial.

The chemical and physical characteristics of antibody should be further defined with a view to determining the nature of its specifically reactive groups and the possibility of synthetic antibody production.

SURVEY OF FACILITIES FOR PRODUCTION OF SERUM

Surveys should be made of the potential therapeutic pneumonia serum output of public and private laboratories. If many states and large cities promptly undertake to supply therapeutic pneumonia serums for all patients, or even for indigent patients in their jurisdiction, it is possible that a shortage of these products might develop. It is possible that, if some responsible agency would contract for a large volume of therapeutic pneumonia serum, the contract to cover a minimum period of about three years, the cost of such serums might be substantially reduced below that prevailing today.

FELTON'S ANTIGEN

The preliminary figures obtained as a result of the immunization of many thousands of men in various CCC camps with derivatives of certain types of pneumococci referred to as "Felton's antigen" suggests that this material may be of value in reducing the incidence of pneumonia. This investigation should be continued and attention should also be given the possibility of carrying out the experimental immunization of a selected civilian population of considerable size. It would seem advisable that adults of all ages be included, that the past pneumonia record of the group chosen be known, and that careful record be kept of all cases in the immunized and control groups for at least six consecutive months. All respiratory infections in both groups should be determined. Adequate facilities should be available for carrying out the clinical and bacteriologic diagnosis of such infections. Certain antibody studies on the blood of individuals in the immunized and control group would be highly desirable.

EPIDEMIOLOGIC STUDIES

From limited studies of normal persons with respect to their carrier rate of pneumococci, it was found that at a given time pneumococci of some type may be present in the nasopharynx of about 40 to 50 per cent of normal people. The incidence is known to increase during the colder months of the year. In addition, a large proportion of all normal people may carry some type of pneumococcus in their nose or throat at some time during each year. Most of the strains carried, however, are representatives of those types least often found in pneumonia.

Observations in a few studies of a small number of families have suggested that when pneumonia due to one of the more virulent types, such as type I, occurs in an individual, about 20 per cent of the other members of the patient's family also are carrying the same type in the nose or throat. When acute infections of the upper respiratory tract, such as colds, are prevalent among the family contacts, the incidence of homologous type carriers may approach 70 or 80 per cent.

The evidence to date suggests that a pneumococcus of a given type may be carried into the family group by one individual, where it rapidly spreads to several members of the family, and at times some one or more individuals within the group may subsequently come down with pneumonia due to that organism. If this is so, it would do little good to insist on the strict isola-

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tion and quarantine of the patient in an effort to prevent the patient's spreading the organism to other members of the family, for many of the latter have already become carriers of the same type. As this matter may affect administrative procedures aimed at controlling the prevalence of pneumonia, it is highly desirable that the question be studied further and that conclusive evidence be obtained of the usual means by which infection is spread both inside and outside the family group.

Several thousand normal persons might be examined periodically for several months to determine the carrier rate of pneumococci of various types. The family contacts of a large number of typed cases of pneumonia might be studied in similar fashion. In addition there is need to pay particular attention to the study of the carrier rate of pneumococci in persons with infections of the upper respiratory tract at the time and in those having pathologic conditions of the mouth, throat, nose and accessory sinuses.

Outbreaks of pneumonia in institutions and small communities may be studied with profit, as little is known of the natural history or usual course of epidemics of this nature. Some evidence has appeared, however, suggesting that the general immunization of the exposed population in institutional epidemics may be of use in aborting the outbreak. Some attention should be paid to means of eradicating the condition in healthy carriers. The preliminary results of studies of this problem in animals suggest that local treatment (washing the nose and throat with specific serum) plus general bodily therapy (parenteral administration of specific serum) is necessary to overcome the carrier condition. The use of Felton's antigen or other immunizing agent might be considered in conjunction with local measures.

STUDY OF ETIOLOGY AND INCIDENCE OF PNEUMONIA

The true frequency of pneumococcal pneumonia, both primary and secondary, in a city, country or larger political unit has never been accurately determined. Arrangements might be made in several communities, preferably in various sections of the country, to set up special pneumonia studies. The importance of case finding is great, and special reporting facilities, which might embrace contact at intervals of a day or two with every physician in the area, should be provided. Over a period of one, two or more years every case of pneumonia, both primary and secondary in each area studied, should be exhaustively studied bacteriologically. Concurrent studies of pneumococcus carriers in the communities investigated would appear to be of great value. Evidence relating to the influence of host factors in current cases should be obtained and carefully analyzed.

SULFANILAMIDE

The results thus far obtained from the therapeutic use of sulfanilamide in animals infected with pneumococci appear sufficiently impressive to warrant further and extensive investigation of the pneumococcal power of this compound and related or other compounds. Whenever it seems advisable, clinical trial of such substances with or without the simultaneous administration of specific immune serum should be made on a fairly extensive scale, with careful controls for comparison.

MORTALITY STUDY

A statistical study should be made of the deaths in which pneumonia is reported as a secondary cause to determine the influence of age, sex, occupation and associated factors in an effort to distinguish differences between such deaths and those certified as being due primarily to pneumonia.

CLASSIFICATION OF DEATHS

The Manual of the International List of Causes of Death, 1929, provides for the following classification: 108, Pneumonia lobar-pneumococcus pneumonia. The Instruction Manual of the Bureau of Census, Department of Commerce, issued Sept. 15, 1937, includes the following recommendation for coding—page C 10—insert or correction—pneumonia types (I to IV 108). It is suggested that the Bureau of Census be asked to recommend that deaths from all types of pneumococcal pneumonia (I to XXXII) be coded under 108 lobar pneumonia, unless, in addition to the type, information is given that the death was due to bronchopneumonia.

PNEUMONIA STATISTICS IN PUBLIC HEALTH REPORTS

The current weekly state reports published in *Public Health Reports* do not include pneumonia. The weekly reports from cities include pneumonia deaths but not cases. It is suggested that consideration be given to including pneumonia cases in state reports and pneumonia cases and deaths in city reports. Such a procedure might stimulate better case reporting.

PNEUMONIA PROGRAM QUESTIONNAIRE

To determine which communities have undertaken pneumonia programs of various sorts and the extent of their efforts in this direction, it is advisable that questionnaires be sent to the departments of health of the various states and to those of cities of 100,000 population or over. This may yield information of value for directing further work of this nature. Similar surveys might be made annually for the next few years.

CONSULTATION SERVICE

It is desirable that the Public Health Service offer a special consultant service to departments of health or other organizations wishing to start pneumonia control programs. With advice of this kind, most communities in which an active interest exists can do a great deal for themselves toward the development of a sound pneumonia program at a minimum cost. The departments of health of states and large cities as well as the medical societies in the corresponding areas should be informed of the availability of this consultation service.

FINANCIAL SUPPORT OF PNEUMONIA PROGRAMS

In addition to lending all possible encouragement and aid to responsible groups wishing to start pneumonia programs, it would seem suitable that a portion of the money made available through the Social Security funds be expended for the support of sound community-wide programs of this kind.

PUBLICITY

The emergency character of pneumonia and the need to restrict activity and avoid exposure and excesses when experiencing a cold or other minor respiratory infection need to be stressed, as well as the importance of prompt medical care when serious symptoms develop. For the medical profession publicity should deal largely with the importance of early typing and early serum treatment in suitable cases, with mention of the desirability of suitable nursing care. The need of careful general medical treatment should also be discussed, which might include present day views of the value of such things as oxygen, diathermy, pneumothorax therapy, chemotherapy and possibly diet, liquids, cathartics and digitalis.

THE TRAINING OF TECHNICIANS

Laboratory technicians assume a position of extraordinary importance in the conduct of pneumonia programs. Many training schools for technicians do not give adequate instruction in pneumococcus typing. The performance of one or two typings is not sufficient for this purpose. Efforts should be made to call this matter to the attention of officials of the associations of pathology, clinical pathologists, public health laboratories and certified technicians and, wherever advisable, to the authorities responsible for the training of technicians. Accuracy in bacteriologic diagnosis, pneumococcus typing and blood culture work is absolutely essential for the successful control of pneumonia mortality by specific serum therapy.

HEALTH SURVEY CASES

Any available data obtained during the health survey and referable to the morbidity of pneumonia should be studied and analyzed in detail. The possible role of factors such as economic status and occupation in influencing the pneumonia attack rate in these cases needs investigation.

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Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Practice Acts: Faith Healing as the Practice of Medicine.—The defendant, Valeria Klinger, was convicted under two counts of violating the provisions of the medical practice act of Illinois and appealed to the appellate court, third division, first district.

An investigator for the department of registration and education testified that she called on the defendant and complained that her arm would repeatedly go out of joint, that the defendant manipulated her shoulder muscles and also worked on her back, that the defendant then seemed to go into a trance, folding her hands as if in prayer, and that she paid the defendant \$1 for the treatment. The defendant testified that she had belonged to the First Spiritualist Church of Cicero for five years and that she was a qualified healer of that church. She did not, she testified, sell any medicine or give it away or prescribe it, or practice surgery. She simply prayed for divine healing and healed through prayer. She denied having treated the investigator. A witness for the defendant, C. A. Burgess, testified that he had been president of the Spiritualist Association of Illinois for twenty-seven years, that it was a regular church incorporated under the laws of the state of Illinois, and that the defendant was a healer of the church. Healers, he testified, are examined by the board of examiners of the church and are given certificates authorizing them to practice.

The Illinois medical practice act, the court pointed out, excludes from its provisions "persons treating human ailments by prayer or spiritual means as an exercise or enjoyment of religious freedom." The evidence in the present case, the court thought, clearly showed that the defendant's method of curing was by prayer, that she was a duly authorized member of the First Spiritualist Church of Cicero, and that her license was issued by the Spiritualist Association of Illinois. In the opinion of the court, her activities came within the exemption contained in the medical practice act relating to persons treating human ailments by prayer or spiritual means. The judgment of conviction was therefore reversed.—*People v. Klinger (Ill.)*, 11 N. E. (2d) 40.

Diseases: Amebic Dysentery Attributed to Fly in Soft Drink.—The plaintiff, a girl 13 years old, drank a portion of a bottle of a soft drink in which, it was contended, there was an infected fly. She became violently ill and remained sick for some three months, at which time a diagnosis of amebic dysentery was made. Attributing the disease to the negligence of the appellant bottling company, the girl, suing by her father as guardian and next friend, recovered a judgment against the company for \$7,500, whereupon the company appealed to the Supreme Court of Arkansas.

A physician who had treated the child testified, in answer to a hypothetical question, that if he had a patient on June 17, 1936, who was in good health and was normal in every particular, and on that occasion she drank two thirds of a bottle of a soft drink and immediately started to vomit, and vomited all night, and that, after that vomiting, she started to lose weight and would pass off mucus, and continued to do so until the time of the trial, and if there was a fly in the soft drink, and the fly had on it the organism that causes amebic dysentery, he would attribute the disease to the fact that the child drank the soft drink with the fly in it. He further testified that anywhere from four days to three months would be required to develop amebic dysentery after the organism had been received in the system. He did not testify that the fly in the bottle had the organism on it, nor did any other witness. Another physician testified that he had attended the child and that he had taken some of the remaining portion of the soft drink and sent it to the state laboratory, which reported that no parasites were found in it. The witness stated, however, that he did not always rely on negative reports of any laboratory tests and did not regard the test made as conclusive.

Proof, said the Supreme Court, of the fact that a fly was found in the bottle, and that flies do carry the organism that causes the disease from which the girl suffered, did not suffice to support the verdict. It was mere conjecture that the fly found in the bottle was a carrier of the organism and had communicated the disease to the girl. The only definite proof with respect to the contamination of the drink was to the effect that no parasites were found in it, and while it may be true, the court said, that the test made was not conclusive, the fact remains that it was the only testimony on the issue of fact. It was mere surmise and conjecture to say that the portion of the drink consumed by the girl was in fact infected, while the remaining portions of the drink were not. The Supreme Court, therefore, reversed the judgment and remanded the cause.—*Coca-Cola Bottling Co. of Southeast Arkansas v. Bell (Ark.)*, 109 S. W. (2d) 115.

Prenatal Injuries: Liability for Death of Infant Injured Prenatally.—Where an infant suffers prenatal injuries through the negligence of another which result in its death three months after birth, the person responsible therefor is not civilly liable, in the opinion of the Supreme Court of Michigan, either at common law or under the Michigan Survival Act. In this case, it was alleged that by reason of the accident, which occurred twenty-two days prior to birth at the end of the normal period of gestation, the infant suffered injuries to his skull causing hydrocephalus and brain hemorrhage, resulting in death. The Supreme Court reversed the judgment of the trial court denying the motion to dismiss the action.—*Newman v. City of Detroit (Mich.)*, 274 N. W. 710.

Malpractice: Patient Burned by Infra-Red Lamp.—The patient in this case seriously crushed and bruised the flesh of his left thigh and was taken to the appellant physician's hospital for treatment. Opiates were administered to relieve his suffering and hot compresses were applied to the injured part, consisting of towels saturated with a hot saline solution and covered with a rubber sheet over which a dry towel was placed. A 500 watt incandescent infra-red lamp was then applied to the injured part through the compresses, the lower rim of the lamp being suspended at a distance of 21 inches from the thigh of the patient. This treatment was instituted about 1:30 in the afternoon. At 2:30 codeine was administered and the patient then became unconscious and remained so until 5:30 in the afternoon. At that time it was discovered that he had sustained a third degree burn. He subsequently brought suit against the appellant physician and the nurse who had personal charge of him. The trial court exonerated the nurse but the jury rendered a verdict against the physician for \$50,000, which, on motion for a new trial, was reduced to \$25,000. The physician then appealed to the district court of appeal, third district, California.

According to the evidence, neither the compress nor the lamp was changed or removed from 1:30 until 5:30 p. m. The physician, whose office was across the hall from the room occupied by the patient, visited him occasionally during this four hour period. About 4:30 the nurse asked the physician whether the lamp or compress should be changed and he advised her to leave them as they were until after the patient's evening meal. The evidence was undisputed, the court said, that tender, devitalized flesh is much more susceptible to burning from excessive heat than is normal flesh. Qualified physicians testified that the third degree burn which was suffered by the patient was the result of subjecting the tender, devitalized flesh of the bruised thigh to excessive heat from the infra-red lamp for too great a length of time. There was evidence that the lamp generated 140 degrees of heat in an hour, and that not more than 110 degrees Fahrenheit should have been applied under the circumstances. The witnesses testified that the treatment of the injury which was administered by the appellant physician was not in accordance with approved medical practice of competent physicians in that vicinity. In the opinion of the court, the evidence justified a finding of negligence on the part of the physician.

The exoneration of the nurse from negligence did not necessarily relieve the physician from liability. Under the circumstances of this case, the court said, the nurse was presumed to

attend the patient under the supervision and direction of her employer, the physician. It was the duty of the physician in his treatment of the patient to see that the compress and lamp were used in such a manner as to prevent the application of excessive heat and consequent burning of the flesh. The supervision of the physician was shown by his personal visit to the room of the patient and by the inquiry of the nurse addressed to him an hour before the burn was discovered as to whether she should not then change the compress, to which he replied "leave them until after his evening meal." The physician was therefore not relieved of liability because of the verdict favorable to his codefendant, the nurse.

The trial court properly instructed the jury at the request of the plaintiff respecting the doctrine of *res ipsa loquitur*. In the present case the patient was burned in some way unknown to him, as a result of the treatment of his injury by the physician. It occurred while he was under the influence of opiates which prevented him from knowing just what caused the burn. The doctrine of *res ipsa loquitur*, therefore, was applicable to the facts of the case.

It was not prejudicial misconduct for the patient's attorneys to offer in evidence a letter written by the physician to the adjuster of an insurance company, although the letter tended to prove that the insurance company may have been interested in the outcome of the litigation. The letter was competent evidence to show that the physician had previously made a statement in writing which was in conflict with his testimony at the trial. If evidence is competent because it is addressed to a valid issue in the case, it is admissible even though it may incidentally disclose the fact that an insurance company is interested in the outcome of the litigation.

The appellate court could find no prejudicial error in the record and therefore affirmed the judgment of the trial court for the plaintiff.—*McCullough v. Langer (Calif.)*, 73 P. (2d) 649.

Workmen's Compensation Acts: Collapse of Lung Attributed to Strain.—The employee in this case was engaged in polishing hoods for automobiles for the appellant corporation. Overhead conveyors, moving constantly and approximately seven feet from the floor, carried the hoods to and from the table at which the employee worked with a partner. In lifting a hood to the conveyor the employee, who as a general rule hung the hoods back on the conveyor after they had been polished, did so in such a manner as to cause his left arm to be extended in an upward position. On Sept. 12, 1936, at about 11 a. m., while in the act of lifting a hood to the conveyor, the employee felt a severe pain in his left side. He sat down for a short period and besides feeling the pain in his left side he perspired, had a shortness of breath and felt "awfully sick." The pain was of a short duration, however, and he continued to work until noon. The pain started again between 1:30 and 2 p. m., and the employee worked at intervals from that time until 3 o'clock, at which time he went home. A physician was summoned on the morning of September 13 and, receiving no relief, the employee called in another physician that same evening, who had him removed to a hospital. This physician testified that the employee had suffered a collapsed lung, which in his opinion took place at the time the employee first experienced the pain, September 12, that both air and blood were found in the pleural cavity, that there was a rupture of an emphysematous bleb or bulla, that the strain and exertion in lifting the hood caused the rupture, and that the employee's condition of total disability was fairly permanent. On behalf of the employer, medical testimony was introduced to the effect that the condition of the employee was one which would occur as the result of an abnormality of the lung without other demonstrable causes. The industrial board awarded the employee compensation under the workmen's compensation act and the employer appealed to the appellate court of Indiana, in Banc.

Here, said the court, the employee experienced a pain while in the act of lifting a hood to the conveyor, and his injury was traced by medical testimony to the act of lifting. The mere fact that the physical condition of an employee might make him more susceptible to the particular injury which resulted in his disability is no reason for holding that a disease or condition,

rather than the accident, was the proximate cause of the injury on which the allowance for disability was based. Not all workmen are constituted alike. Some are stronger than others and more capable of doing the same work. Some would use more exertion or effort in performing the same labor and, because of their physical condition, might be more susceptible to injury. The act of lifting the hoods to the conveyor undoubtedly required some physical effort and exertion which the industrial board found contributed to the injury complained of. While the work required of the employee may be characterized as ordinary, and such work may have been accomplished by other employees without injury, yet his injury was attached to a definite occurrence incidental to his employment and within the well defined meaning of the term "accident," as used in the workmen's compensation act. The court, therefore, affirmed the award of compensation.—*Studebaker Corporation v. Jones (Ind.)*, 10 N. E. (2d) 747.

Society Proceedings

COMING MEETINGS

- American Medical Association, San Francisco, June 13-17. Dr. Olin West, 535 North Dearborn St., Chicago, Secretary.
- American Academy of Pediatrics, Del Monte, Calif., June 9-11. Dr. Clifford G. Gruice, 636 Church St., Evanston, Ill., Secretary.
- American Academy of Tuberculosis Physicians, San Francisco, June 17-18. Dr. Arnold Minnig, 638 Metropolitan Bldg., Denver, Secretary.
- American Association of Industrial Physicians and Surgeons, Chicago, June 6-9. Dr. Volney S. Cheney, Armour and Company, Union Stock Yards, Chicago, Secretary.
- American Association of Medical Milk Commissions, San Francisco, June 13-14. Dr. Paul B. Cassidy, 2037 Pine St., Philadelphia, Secretary.
- American Dermatological Association, Del Monte, Calif., June 9-11. Dr. Fred D. Weidman, 36 Hamilton Walk, Philadelphia, Secretary.
- American Gynecological Society, Asheville, N. C., May 30-June 1. Dr. Richard W. TeLinde, 11 East Chase St., Baltimore, Secretary.
- American Heart Association, San Francisco, June 10-11. Dr. Howard B. Sprague, 50 West 50th St., New York, Secretary.
- American Medical Women's Association, San Francisco, June 12-14. Dr. Helen A. Cary, 1634 N.E. Halsey St., Portland, Ore., Secretary.
- American Ophthalmological Society, San Francisco, June 9-11. Dr. Eugene M. Blake, 303 Whitney Ave., New Haven, Conn., Secretary.
- American Pediatric Society, Bolton Landing, N. Y., June 9-11. Dr. Hugh McCulloch, 325 North Euclid Ave., St. Louis, Secretary.
- American Proctologic Society, San Francisco, June 11-13. Dr. Curtice Rosser, 710 Medical Arts Bldg., Dallas, Texas, Secretary.
- American Psychiatric Association, San Francisco, June 6-10. Dr. W. C. Sandy, State Education Bldg., Harrisburg, Pa., Secretary.
- American Radium Society, San Francisco, June 13-14. Dr. F. W. O'Brien, 465 Beacon St., Boston, Secretary.
- American Rheumatism Association, San Francisco, June 13. Dr. Loring T. Swaim, 372 Marlborough St., Boston, Secretary.
- American Society of Clinical Pathologists, San Francisco, June 9-11. Dr. A. S. Giordano, 531 North Main St., South Bend, Ind., Secretary.
- American Urological Association, Quebec, Canada, June 27-30. Dr. Clyde L. Deming, 789 Howard Ave., New Haven, Conn., Secretary.
- Association for the Study of Allergy, San Francisco, June 9-10. Dr. J. Harvey Black, 1405 Medical Arts Bldg., Dallas, Texas, Secretary.
- Association for the Study of Internal Secretions, San Francisco, June 13-14. Dr. E. Kost Shelton, 921 Westwood Blvd., Los Angeles, Secretary.
- Connecticut State Medical Society, Groton, June 1-2. Dr. Creighton Barker, 258 Church St., New Haven, Secretary.
- Hawaii Territorial Medical Association, Honolulu, May 20-22. Dr. Douglas B. Bell, Dillingham Bldg., Honolulu, Secretary.
- Illinois State Medical Society, Springfield, May 17-19. Dr. Harold M. Camp, Lahl Bldg., Monmouth, Secretary.
- Maine Medical Association, Bar Harbor, June 26-28. Dr. F. R. Carter, 22 Arsenal St., Portland, Secretary.
- Massachusetts Medical Society, Boston, May 31-June 2. Dr. Alexander S. Begg, 8 The Fenway, Boston, Secretary.
- Medical Library Association, Boston, June 28-30. Miss Janet Doe, 2 East 103d St., New York, Secretary.
- Minnesota State Medical Association, Duluth, June 29-July 1. Dr. E. A. Meyerding, 11 West Summit Ave., St. Paul, Secretary.
- National Tuberculosis Association, Los Angeles, June 20-23. Dr. Charles J. Hatfield, 7th and Lombard Sts., Philadelphia, Secretary.
- New Hampshire Medical Society, Manchester, May 17-18. Dr. Carleton R. Metcalf, 5 South State St., Concord, Secretary.
- New Jersey Medical Society of Atlantic City, May 17-19. Dr. Alfred Stahl, 55 Lincoln Park, Newark, Secretary.
- New Mexico Medical Society, Santa Fe, June 6-8. Dr. L. B. Cohenour, 219 West Central Ave., Albuquerque, Secretary.
- North Dakota State Medical Association, Bismarck, May 16-18. Dr. Albert W. Skelsey, 20½ North Broadway, Fargo, Secretary.
- Rhode Island Medical Society, Providence, June 1-2. Dr. Guy W. Wells, 124 Waterman St., Providence, Secretary.
- Society of Surgeons of New Jersey, Hackensack, May 25. Dr. Walter B. Mount, 21 Plymouth St., Montclair, Secretary.
- South Carolina Medical Association, Myrtle Beach, May 17-19. Dr. E. A. Hines, Seneca, Secretary.
- Western Branch of American Public Health Association, Portland, Ore., June 6-8. Dr. William P. Shepard, 600 Stockton St., San Francisco, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1927 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery

7: 321-356 (March) 1938

- Technic of Anesthesia, as Practiced at Employees Hospital. E. B. Robinson Jr., Fairfield.—p. 321.
Pyelonephritis of Pregnancy. H. K. Turley, Memphis, Tenn.—p. 326.
General Medicine and the Eye. H. W. Frank, Gadsden.—p. 328.
Syphilis: Some Observations and Conclusions Drawn from Administration of 120,600 Antisyphilitic Treatments to 4,560 Patients. J. P. Robertson, Birmingham.—p. 331.

American Heart Journal, St. Louis

15: 257-384 (March) 1938

- *Immunization Against Rheumatic Fever with Hemolytic Streptococcus Filtrate. Valentina P. Wasson, New York.—p. 257.
Evaluation of Results in Treatment of Peripheral Circulatory Diseases. S. Silbert, New York.—p. 265.
Paroxysmal Bundle Branch Block Associated with Heart Disease: Review and Analysis of Literature, with Thirteen New Cases and Notes on Influence of Vagus. W. J. Comeau, Boston; J. G. M. Hamilton, Edinburgh, Scotland, and P. D. White, Boston.—p. 276.
Correlation of Fluoroscopic, Clinical and Postmortem Findings in 155 Cases of Organic Heart Disease. B. S. Epstein, Brooklyn, and J. B. Schwedel, New York.—p. 317.
Possibility of Emboli from Arterial Thrombosis Short-Circuiting Peripheral and Pulmonary Capillary Circulations: Report of Suggestive Case. L. F. Frissell, New York.—p. 335.
Determination of Exercise Tolerance by Two-Step Test. J. A. Reisinger, Washington, D. C.—p. 341.

Attempt at Immunization Against Rheumatic Fever.—Wasson attempted to immunize thirty-four children who have had attacks of rheumatic fever with stock filtrate of Streptococcus haemolyticus. Ten children received inoculations with the filtrate from September 1933 to June 1935 and twenty-four children from September, 1935 to June 1937. Thirty-four patients were used as controls. The only criterion used for selecting the patients for treatment was their willingness to cooperate during the protracted course of inoculations, involving weekly and monthly visits to the clinic. Subcutaneous injections were first given weekly in graduated doses of 0.3, 0.6 and 0.9 cc. beginning with the 1:100 dilution, followed by similar doses of stronger concentrations. After twelve injections a month was allowed to elapse, at the end of which time 0.3 cc. of the full strength filtrate was given, followed at monthly intervals by 0.6 and 0.9 cc. The latter dose was repeated monthly until the beginning of June. The treatment was then discontinued until September, when the whole course was repeated as before. The thirty-four children who received inoculations of hemolytic streptococcus filtrate fared well as compared with the untreated groups and even with the average health experience of any group of normal children. Whether this was due to treatment or to a fortunate chance selection of patients cannot be stated. Of thirty-four children only two, or 5.9 per cent, had the disease in its acute phase during the course of treatment, while two control groups showed 15 per cent and 43.4 per cent, respectively. The physical condition of the control patients remained mediocre, and complaints of pains, headaches and fatigue were frequent.

American J. Digest. Dis. & Nutrition, Fort Wayne, Ind.

4: 787-852 (Feb.) 1938

- The Dietary Problem of the Food Sensitive Patient. A. H. Rowe, San Francisco.—p. 787.
Rare Case of Primary Liver Carcinoma in Liver Fluke Disease (Clonorchis Sinensis). W. A. Swalm, E. S. Gault and L. Morrison, Philadelphia.—p. 789.
Evolutionary Contributions to the General Function of the Gallbladder. F. Gorham and A. C. Ivy, Chicago.—p. 792.
Mechanism of Production of Digestive Symptoms Associated with Urologic Pathology. P. B. Welch, M. M. Coplan and R. J. Holmes, Miami, Fla.—p. 797.

- Effect of Bleeding Ulcers and Hemorrhagic Anemia on Whole Blood Copper and Iron. A. Sachs, Omaha.—p. 803.
Acquired Hemolytic Jaundice. J. W. Rastetter and F. D. Murphy, Milwaukee.—p. 805.
Studies on Control of Gastric Secretion. A. J. Atkinson and A. C. Ivy, Chicago.—p. 811.
Influencing Factors in Nutritional Deficiency Disease. R. L. Haden, Cleveland.—p. 816.
Clinical and Pathologic Manifestations of Carcinoma of the Stomach. A. Levitt and J. F. Argue, Buffalo.—p. 818.
Value of Diagnostic Nonsurgical Biliary Drainage as Compared with Cholecystography (Analysis of Biliary Drainage Findings in Sixty-Four Operated Cases Compared with Findings by Cholecystography in Sixty of These Cases). W. T. Doran, J. W. Forster and L. C. B. Spier, New York.—p. 821.

American Journal of Surgery, New York

39: 477-672 (March) 1938

- Human Craniovertebral Dynamics. J. Loman, Boston.—p. 479.
*Intraspinal (Subarachnoid) Injection of Vitamin B₁ for Relief of Intractable Pain, and for Inflammatory and Degenerative Diseases of Central Nervous System: Preliminary Report. E. L. Stern, New York.—p. 495.
Physiologic Indications in Treatment of Brain Injuries. B. F. Davis, Duluth, Minn.—p. 512.
Gastroscopy in Diagnosis of Gastric Disease. H. J. Moersch and A. M. Snell, Rochester, Minn.—p. 521.
Gastric Carcinoma. D. P. MacGuire, New York.—p. 527.
Therapeutic Value of Glycerol Trinitrate in Biliary Colic and in Post-operative Phase of Biliary Tract Disease. R. R. Best and N. F. Hicken, Omaha.—p. 533.
Ambulatory Method of Treating Femoral Shaft Fractures, Utilizing Fracture Table for Reduction. R. Anderson, Seattle.—p. 538.
End Results of Early and Delayed Tendon Suture. C. R. G. Forrester, Chicago.—p. 552.
Some Theoretical Considerations in Construction of Active Scoliosis Braces. J. Wolf, Davenport, Iowa.—p. 557.
Clinicorontogenologic Considerations of Acute Thoracic Empyema: Thoracic Complications and Sequels in the Nontuberculous Form. S. G. Schenck and L. A. Hochberg, Brooklyn.—p. 561.
Intravenous Anesthesia: Clinical Study of 1,900 Cases. B. M. Carraway and C. N. Carraway, Birmingham, Ala.—p. 576.
Analgesia in Labor: One Year's Experience with New Analgesic Sigmamol. F. V. Emmert and S. Goldschmidt, St. Louis.—p. 581.
Management of Calculi in Lower Third of Ureter. A. D. Mungér, Lincoln, Neb.—p. 584.
Review of "V" Type Nephrotomy for Staghorn Calculus, with Especial Reference to Final Results. G. C. Prather, Boston.—p. 589.
Medical and Surgical Treatment of Chronic Prostatitis. L. M. Orr 2d, Orlando, Fla.—p. 602.
Clinical Use of Alkyl-Dimethyl-Benzyl-Ammonium Chloride (Zephiran): Preliminary Report. C. S. White, J. L. Collins and H. E. Newman, Washington, D. C.—p. 607.
Evisceration: Postoperative Complication. I. Kross, New York.—p. 610.
Plastic Operation of the Breast with Flexible Adaptation. P. W. Vestal, New Haven, Conn.—p. 614.
Lymphatic Injection with Radiopaque Substance for Roentgen Examination in Carcinoma of Mammary Gland: Preliminary Note. J. J. Gilbride, Philadelphia.—p. 617.

Intraspinal Injection of Vitamin B₁ for Intractable Pain.—In determining the feasibility of intraspinal injections of synthetic vitamin B₁, Stern made experiments on cats; since then 120 intraspinal subarachnoid injections in doses from 500 to 50,000 international units (from 1 to 100 mg.) were given to twenty-eight patients with inoperable cancer, von Recklinghausen's disease, multiple sclerosis, degeneration of the pyramidal system of unknown etiology, thrombo-angiitis obliterans with pregangrenous condition of the feet, duodenal ulcer with pulmonary tuberculosis, alcoholic neuritis of the supra-orbital nerve and of the sciatic nerve, cardiac decompensation, uremia, anuria, tabes dorsalis, hypertrophic spondylitis, osteoporosis of the spine, Paget's disease, intractable pruritus ani and vulvae, beriberi and acute poliomyelitis. The beneficial effects of intraspinal vitamin B₁ appear much quicker than when given by other routes, because the vitamin remains in the cerebrospinal fluid for several days after a direct intraspinal injection. Improvement in varying degrees was noted in all patients: all felt better and looked better; appetites were increased, pain was lessened or abolished, muscular control, speech and gait improved, the joints became looser, libido was increased and diplopia was corrected. The case of multiple neurofibromatosis responded most favorably. Besides marked general improvement, some nodules became softer and smaller and some have disappeared. Treatment should start with 10 mg. and be increased every fourth to seventh day, or more frequently in urgent cases. No patient had any paralysis, anesthesia or signs

of meningitis following the injection. Spinal fluid cell counts were not appreciably increased. The hydrogen ion reading of the spinal fluid was usually reduced. In all cases showing a pH above 8.5, treatment should be pushed, but it is inadvisable to reduce the pH below 7, since restlessness and nervousness may ensue. Uncontrolled intraspinal administration may cause "vitamin B₁ poisoning," which, as demonstrated experimentally, may prove fatal.

Annals of Internal Medicine, Lancaster, Pa.

11: 1563-1776 (March) 1938

- Effect of Duodenal Stimulation in Man on Alimentary and Adrenalin Hyperglycemia. H. Shay, J. Gershon-Cohen and S. S. Fels, Philadelphia.—p. 1563.
- Chronic Hypochromic Anemia in Women: Its Gastrointestinal, Gynecologic, Endocrine and Psychiatric Features. S. G. Meyers, A. H. Price, H. C. Mack, L. J. Foster and E. A. Sharp, Detroit.—p. 1590.
- *Fever Therapy in Treatment of Acute Rheumatic Fever. F. L. Dunn and E. E. Simmons, Omaha.—p. 1600.
- Course of Hypertensive Heart Disease: III. Significance of Bundle Branch Block. N. Flaxman, Chicago.—p. 1607.
- Association of Adenomyosarcoma of Kidney (Wilms' Tumor) with Arterial Hypertension. J. E. Bradley and M. C. Pincoffs, Baltimore.—p. 1613.
- Medical Shrines: Remarks at the Annual Banquet of the American College of Physicians, 1937. L. Clendening, Kansas City, Mo.—p. 1629.
- Relation of Pulmonary Function to Fibrosis and Emphysema. J. A. Miller and I. Rappaport, New York.—p. 1644.
- Different Clinical Groups of Xanthomatous Diseases: Clinical Physiologic Study of Twenty-Two Cases. S. J. Thannhauser and H. Magendanz, Boston.—p. 1662.

Fever Therapy in Acute Rheumatic Fever.—Dunn and Simmons comment on fifteen cases of acute rheumatic fever treated by fever therapy, three of which were complicated by chorea; thirteen patients became symptom free, three had relapses and one showed moderate improvement although there were still rheumatic manifestations three months after forty-eight hours of fever between 103 to 105 F. Salicylates were given to twelve patients over periods of from six days to seven weeks before fever therapy was tried. Fever therapy reduced the symptomatic activity of rheumatic fever and in many cases the leukocyte counts and sedimentation rates became normal.

Archives of Internal Medicine, Chicago

61: 371-522 (March) 1938

- *Relief of Diabetic Pain of Neurocirculatory Origin by Oral Administration of Sodium Chloride. H. R. Sandstead, Washington, D. C., and A. J. Beams, Cleveland.—p. 371.
- Electrocardiographic Patterns in Acute Pericarditis: Evolution, Causes and Diagnostic Significance of Patterns in Limb and Chest Leads: Study of Fifty-Seven Cases. S. Bellet and T. M. McMillan, Philadelphia.—p. 381.
- Iron Retention in Pernicious Anemia, Lead Poisoning and Myxedema. W. M. Fowler and Adelaide P. Barer, Iowa City.—p. 401.
- *Granulocytopenic Fraction of Yellow Bone Marrow. C. M. Marberg and H. O. Wiles, Chicago.—p. 408.
- Variation in Creatine Content of Human Cardiac and Voluntary Muscle at Autopsy. C. R. Linegar, Washington, D. C.; T. T. Frost, Winston-Salem, N. C., and V. C. Myers, Cleveland.—p. 430.
- Effect of Jaundice on Chronic Infectious (Atrophic) Arthritis and on Primary Fibrositis: Further Observations; Attempts to Reproduce the Phenomenon. P. S. Hench, Rochester, Minn.—p. 451.
- Experimentally Induced Jaundice (Hyperbilirubinemia): Report of Animal Experimentation and of Physiologic Effect of Jaundice in Patients with Atrophic Arthritis. H. E. Thompson and B. L. Wyatt, Tucson, Ariz.—p. 481.
- Bright's Disease: Review of Recent Literature. W. S. McCann, Rochester, N. Y.—p. 501.

Relief of Diabetic Pain with Sodium Chloride.—Sandstead and Beams studied the effect of the oral administration of from 15 to 90 Gm. daily of sodium chloride on thirteen diabetic patients complaining of pain who had not been relieved by the usual diabetic management. The pain was of neuritic origin in ten and of arteriosclerotic origin in three. All the patients obtained complete or marked relief of the neuritic symptoms after the administration of sodium chloride. The relief of pain was accompanied by signs of improvement in the vascular disease in the patients with arteriosclerotic pain and by improvement in the circulation of those with neuritic pain, as shown by the histamine test. Ischemia, the result of vascular disease, primarily arteriosclerosis, appears responsible for the neuritic symptoms. The oral administration of sodium chloride appears to be the rational treatment for the neurocirculatory complications of diabetes.

Granulocytopenic Fraction of Yellow Bone Marrow.—Marberg and Wiles gave four patients with leukopenia and six with agranulocytic angina (malignant neutropenia) yellow bone marrow concentrate orally; all recovered. Those with acute leukopenia showed improvement in about forty-eight hours. In no case was there a recurrence of the depression of the blood cells or clinical symptoms during the period of treatment. Clinical recovery in cases of leukopenia or agranulocytic angina coincides with or follows immediately after the restoration of a blood picture consistent with the severity of the local lesions. The results confirm the clinical observations of Watkins made with whole yellow bone marrow and establish the activity of a concentrate devoid of the bulky inert neutral fats which make whole bone marrow unpleasant for clinical use.

Archives of Ophthalmology, Chicago

19: 331-486 (March) 1938

- Local Bloodletting in Ophthalmic Practice. C. Koller, New York.—p. 331.
- Clinical Angioscotometry: New Method, with Use of Different Contrast Test Objects. A. I. Dashevsky, Kharkov, U. S. S. R.—p. 334.
- Precancerous Melanosis and Diffuse Malignant Melanoma of Conjunctiva. A. B. Reese, New York.—p. 354.
- Vitamins in Treatment and Prevention of Ocular Diseases. A. M. Yudkin, New Haven, Conn.—p. 366.
- Results of Stlectomy in Treatment of Pigmentary Retinitis. J. A. Caeiro, Buenos Aires, Argentina.—p. 378.
- Some Newer Developments in Precision Type Stereoscopes. E. Krimsky, Brooklyn.—p. 394.
- Ophthalmologic Shorthand. W. H. Howard, Chicago.—p. 403.
- Prognosis of Bacillus Welchii Panophthalmitis. S. Walker Jr., Chicago.—p. 406.
- Concept of Abnormal Retinal Correspondence: Theoretical Analysis. Clara Burri, Chicago.—p. 409.

Archives of Physical Therapy, Chicago

19: 129-192 (March) 1938

- Effects of Heat, Cold and Other Stimuli on Human Circulation. C. W. Dail and F. B. Moor, Loma Linda, Calif.—p. 135.
- Pyretotherapy in Cardiovascular Diseases. C. Laubry, J. Walser and J. Meyer, Paris, France.—p. 144.
- Electrosurgery of Cancer of Nasal Accessory Sinuses. E. N. Kime, Indianapolis.—p. 155.
- Passive Vascular Exercise in Peripheral Vascular Diseases. G. H. Yeager, Baltimore.—p. 158.
- Physical Therapy in Peripheral Vascular Disease. I. S. Wright, New York.—p. 161.
- Diathermy in Calcium Deposits Around Subacromial Bursa and Supraspinatus Tendon. B. S. Troedsson, Bryn Mawr, Pa.—p. 166.

Archives of Surgery, Chicago

36: 373-560 (March) 1938

- Lumbar Approach to Renal Artery for Application of Goldblatt Clamp. F. Glenn and C. G. Child, New York.—p. 373.
- Effect of Passing Renal Blood Through Liver in Dogs with Experimental Hypertension. C. G. Child and F. Glenn, New York.—p. 376.
- Modification of van Leersum Carotid Loop for Determination of Systolic Blood Pressure in Dogs. C. G. Child and F. Glenn, New York.—p. 381.
- Arthroplasty of Hip: Statistical Study of Sixty Operations. D. M. Fuiks, Davenport, Iowa.—p. 386.
- *Hygroma Colli Cysticum and Hygroma Axillare: Pathologic and Clinical Study and Report of Twelve Cases. E. Goetsch, Brooklyn.—p. 394.
- Phenomena Due to Misdirection of Regenerating Fibers of Cranial, Spinal and Autonomic Nerves: Clinical Observations. F. R. Ford and B. Woodhall, Baltimore.—p. 480.
- Hemorrhagic Infarction of Greater Omentum. A. R. Berger, New York.—p. 497.
- Effect of Hypoproteinemia on Wound Disruption. W. D. Thompson, I. S. Ravdin and I. L. Frank, Philadelphia.—p. 500.
- *Use of Lyophilic Plasma in Correction of Hypoproteinemia and Prevention of Wound Disruption. W. D. Thompson, I. S. Ravdin, J. E. Rhoads and I. L. Frank, Philadelphia.—p. 509.
- Iliopectineal Bursitis. J. G. Finder, Chicago.—p. 519.
- Review of Urologic Surgery. A. J. Scholl, Los Angeles; F. Hinman, San Francisco; A. von Lichtenberg, Budapest, Hungary; A. B. Hepler, Seattle; R. Gutierrez, New York; G. J. Thompson, J. T. Priestley, Rochester, Minn.; E. Wildbolz, Berne, Switzerland, and V. J. O'Connor, Chicago.—p. 531.

Hygroma Colli Cysticum and Hygroma Axillare.—Goetsch presents a study of twelve cases of cystic hygroma. In ten the growth involved primarily the cervical region and in two the axilla. The plausible theory of its etiology is that it arises from sequestrations of lymphatic tissue. In cervical hygroma, such sequestrations are derived from primitive jugular sacs which have failed to join the lymphatic system in the normal manner. Their potentiality of increasing in size is due

to the fact that these "lymphatic rests" retain their embryonic power of irregular growth. In the average case there are no local or constitutional symptoms, although there may be cosmetic disfigurement. Severe respiratory embarrassment may occur when the tumor extends into the mediastinum. The large hygroma has a tendency to become secondarily infected, and the infection may be followed by serious symptoms or even death. Anemia and a poor nutritional condition are occasionally noted in children. Hygroma is a benign, true neoplastic tumor of lymphatic origin. Histologic evidence is offered as a basis for the explanation of the manner of growth, development and destructive action of hygroma. Endothelial fibrillar membranes or sprouts from the walls of the marginal cysts penetrate the adjacent normal tissues. A lymphlike fluid is secreted within the fibrillae, which are thereby caused to spread apart and canalize. Minute cysts with an endothelial lining are thus formed within these sprouts. By continued secretion within, the cysts enlarge; by pressure atrophy of the walls between adjoining cysts, the large cavities characteristic of hygroma are formed. The fibrillar membranes infiltrate and circumscribe adjacent tissues. Muscle fibers, nerves or other anatomic units are thereby sequestered and destroyed either by direct atrophy and fatty degeneration or by being engulfed and disintegrated in the cystic fluid which is subsequently formed about them. Aspiration, simple incision for drainage and injection of sclerosing substances are futile in view of the multilocular nature of the tumors and the great danger of secondary infection. Radical surgical excision is the treatment of choice. There was one death. In one case there was a recurrence of the growth five months after the first operation. Late results following operation for hygroma were observed in five instances over periods of from ten months to ten and a half years. In a case of partial excision of a hygroma which was subsequently treated by high voltage roentgen therapy, the patient was in good condition fourteen months after operation. In the remaining five cases the immediate result was satisfactory but a late follow-up was not possible.

Prevention of Wound Disruption.—Thompson and his colleagues demonstrated that delay in healing of a wound in hypoproteinemic dogs may be prevented by promptly restoring the serum protein to a normal level after laparotomy and maintaining this level during the period of healing. In attaining this objective they used the plasma removed by plasmapheresis, which had been lyophilized and kept in the dehydrated state until just prior to its injection. Care was taken to supply all other known dietary factors in adequate amounts to the hypoproteinemic dogs. In three dogs subjected to bilateral laparotomy during the hypoproteinemic state, disruption of the wounds or failure to heal was not observed when the hypoproteinemia was controlled, after abdominal incision, by intravenous infusion of lyophilic plasma. Biopsy of wounds seven and fourteen days postoperatively had no similarity to the condition observed in hypoproteinemic dogs except moderate moistness, which was observed at the first biopsy. Considerable fibroplasia was evident seven days after the abdominal incisions. Determinations of total serum proteins gave values below the critical level for edema at the time of the original laparotomy and were elevated to within normal limits in seven days after six venoclyses of plasma. This level was maintained or elevated for the second period of seven days with four venoclyses of plasma. Sections of tissue removed on the fourteenth day showed firm fibroblastic repair and the intercellular edema present at operation had disappeared. The experiments demonstrate that healing of the wound can take place normally if the concentration of blood proteins is restored to normal and maintained there during the period in which the wound is healing. Deficiency of blood proteins retards healing and enhances wound disruption. The lyophilic process of preserving plasma described by Florsdorf and Mudd in 1935 provides plasma in such a state that it can be shipped to isolated communities and kept for months at refrigerator temperature. It can be given intravenously as a hypertonic solution. It rapidly replenishes the protein deficit and, being given as a hypertonic solution, it rapidly increases the osmotic pressure of the blood, thus effectively overcoming any tissue edema which may be present.

California and Western Medicine, San Francisco

48: 153-232 (March) 1938

Dural Defects: How Important Is Their Surgical Repair? Experimental and Clinical Study on Heteroplastic and Autoplastic Dural Grafts. M. A. Glaser and C. H. Thienes, Los Angeles.—p. 163.
Trichinosis. J. B. McNaught, San Francisco.—p. 166.
*Snake Venom: Its Use in Postoperative Hemorrhage of the Eye. W. F. Swett, San Francisco.—p. 173.
Brucellosis of the Male Genitalia. T. I. Buckley, Oakland.—p. 175.
Mediolar Epistiotomy. G. D. Huff, San Diego.—p. 177.
Regional Anesthesia for Orthopedic Operations. C. F. McCuskey, Glendale.—p. 179.
Compensatory Pressure in Anesthesia for Thoracic Surgery. W. Lawrence, San Francisco.—p. 182.

Snake Venom.—Swett used moccasin venom in six cases in the management of postoperative ocular hemorrhage. In the first case, hemorrhage occurred the first day following operation and continued to ooze in spite of all treatment for ten days. Moccasin venom stopped the oozing immediately after the first injection of 0.4 cc. As soon as the hemorrhage was checked, the blood disappeared rapidly from the anterior chamber and the wound was closed completely four days later. Identical results were obtained in four similar cases. The author has administered it only in those cases which showed a tendency to hemorrhage after operation and found that 0.5 cc. given daily for one week has been sufficient. He believes that the ideal method of its use would be to give these injections previous to operation to prevent the complications rather than to correct them. In one case of a severe iridocyclitis accompanied by hemorrhage in the anterior chamber, 0.5 cc. of the venom given subcutaneously stopped the bleeding. It also stopped the bleeding in the face of a severe inflammation in which no operation had been performed.

Canadian Medical Association Journal, Montreal

38: 209-316 (March) 1938

Study of Crystalline Siliceous Minerals Present in Silicotic Lungs by X-Ray Diffraction Method. C. M. Jephcott, W. M. Gray and D. A. Irwin, Toronto.—p. 209.
Important Minor Points in Local Anesthesia. P. D. Woodbridge, Boston.—p. 216.
Cyclotron and Its Contacts with X-Ray and Radium Therapy. J. S. Foster, Montreal.—p. 222.
Organization of Rheumatism Service. H. L. Bacal and R. R. Struthers, Montreal.—p. 227.
Adrenal Hemorrhage (Waterhouse-Friderichsen Syndrome) in a Young Child. S. J. Usher, Montreal.—p. 232.
Acute Cholecystitis. J. McKenty, Winnipeg, Manit.—p. 236.
Carbon Dioxide. R. M. Waters, Madison, Wis.—p. 240.
Results in Medical Treatment of Gastric Ulcer. E. J. Maltby and E. E. Cleaver, Toronto.—p. 243.
Metastasis and Metastases. E. L. Pope, Edmonton, Alta.—p. 244.
Diagnosis and Palliative Treatment of Trifacial Neuralgia. W. A. Cricht, Toronto.—p. 249.
The Problem of the Deaf Child. D. E. S. Wishart, Toronto.—p. 254.
*Poliomyelitis: Vitamin B Deficiency a Possible Factor in Susceptibility. W. J. McCormick, Toronto.—p. 260.
Pruritus Ani. J. T. Danis, Toronto.—p. 265.

Poliomyelitis.—McCormick advances the hypothesis of a vitamin B deficiency in an attempt to interpret the incidence of paralysis in poliomyelitis. Aside from the age, sex and seasonal incidence, which seem definitely related to the metabolic demand for vitamin B, the hypothesis would account for the spotty and relatively small incidence of paralytic symptoms, the lack of contagious relationship between such cases, and the recognized ineffectual control by quarantine. The infant and young child of today are amply supplied with vitamins A, C and D but no routine measures are employed to contravene vitamin B deficiency in the diet of young children at a time when rapid growth makes increased demands for this essential food element. No data are submitted in support of the theory advanced, but, if its basis is sound, it would appear that a fair clinical trial should be given to this natural nerve-protective agency, which has proved to be effectual in the treatment of other paralytic conditions of undoubted similarity. The most hopeful application of the theory advanced should be in prophylaxis and during convalescence rather than in the acute invasional stage of the disease.

Delaware State Medical Journal, Wilmington

10: 33-50 (March) 1938

Importance of Ocular Examinations After the Fourth Decade of Life. W. Zentmayer, Philadelphia.—p. 33.
Simplified Diabetic Management: A New Regimen. J. M. Barsky and C. S. Levy, Wilmington.—p. 39.

Georgia Medical Association Journal, Atlanta

27: 77-134 (March) 1933

- Telltale Evidence in Certain Ovarian Tumors. R. H. Chaney and R. B. Greenblatt, Augusta.—p. 91.
Preliminary Report of Obstetric Device. R. Torpin, Augusta.—p. 96.
Psychiatry. H. Cleckley, Augusta.—p. 98.

Illinois Medical Journal, Chicago

73: 177-264 (March) 1933

- Problems Bearing on Pathogenesis and Treatment of Acute Poliomyelitis. P. H. Harmon, W. M. Krigsten and H. N. Harkins, Chicago.—p. 195.
A General Consideration of Treatment of Cancer of the Breast. A. Brunschwig, Chicago.—p. 203.
Progressive Muscular Dystrophy: Pseudohypertrophic Type. L. Belinson, Elgin.—p. 206.
Exophthalmic Goiter and Gastroduodenal Ulcer: Two Constitutionally Different Diseases: Note on Pernicious Anemia. S. C. Robinson, Chicago.—p. 210.
Simplified Analgesia in Urology. J. E. F. Laibe, Chicago.—p. 224.
The Oculist and Refraction. E. R. Lescher, Elgin.—p. 226.
Mesenteritis Retrahens. W. W. Voigt, Chicago.—p. 232.
Sulfanilamide: Brief Review of Its Development, Chemistry and Clinical Use. C. A. Johnson, Chicago.—p. 235.
Use of Nupercaine in Oil for Alleviation of Postoperative Pain in Hemorrhoidectomies: Report of 100 Cases. L. H. Block, Chicago; B. L. Greene and G. A. Wiltrakis, Elgin.—p. 238.
Pleuritic Pain. J. L. Bailen, Chicago.—p. 242.
Facility of Varicose Vein Treatment. P. F. Shapiro and J. Bolotin, Chicago.—p. 244.
Some Facts and Fallacies Regarding Psychoanalysis. G. W. Wilson, Chicago.—p. 248.
Music Becomes a Medicine. E. Podolsky, Brooklyn.—p. 255.
Labor in Justo Minor Pelvis. T. W. Blachley, Chicago.—p. 259.
Therapy of Gas Gangrene: Report of Case. W. C. Kennedy, Effingham.—p. 260.

Iowa State Medical Society Journal, Des Moines

28: 89-126 (March) 1933

- Operations of Choice and Necessity in Surgical Treatment of Duodenal Ulcer. V. C. Hunt, Los Angeles.—p. 89.
Surgical Parotitis. A. M. Wiesen, Council Bluffs.—p. 94.
Insulin Shock Therapy: Current Review. G. W. Robinson Jr., Kansas City, Mo.—p. 96.
Hearing Tests in Iowa Schools. W. H. Gardner, Iowa City.—p. 98.
Unusual Symptoms Due to Roundworm Infestation. R. Stahr, Fort Dodge.—p. 99.

Journal of Clinical Investigation, New York

17: 119-206 (March) 1933

- Urea Excretion at Low Urine Volumes: Calculation of "Minimal" Urea Clearances. L. C. Chesley, Jersey City, N. J.—p. 119.
Excretion of Porphyrin in Refractory and Aplastic Anemia. K. Dobriner, C. P. Rhoads and L. E. Hummel, New York.—p. 125.
Effect of Artificial Fever and Specific Antiserum on Organisms Present in Cases of Type III Pneumococcus Meningitis. M. F. Shaffer, J. F. Enders and J. Wilson, Boston.—p. 133.
Flow of Blood in Coronary Arteries in Pathologic Hearts. W. B. Kountz and J. R. Smith, St. Louis.—p. 147.
Clinical Studies of Blood Volume: IV. Adaptation of Method to Photoelectric Microcolorimeter. J. G. Gibson 2d, Boston, and K. A. Evelyn.—p. 153.
*Alkaline Tides. G. D. Barnett and F. E. Blume, San Francisco.—p. 159.
State of Calcium in High Protein Serum: Note. H. I. Chu and A. B. Hastings, Boston.—p. 167.
Ascorbic Acid in Cerebrospinal Fluid. M. Pijoan, L. Alexander and A. Wilson, Boston.—p. 169.
Concentration of Glucosamine in Normal and Pathologic Serums. R. West and D. H. Clarke, with technical assistance of E. M. Kennedy, New York.—p. 173.
Study of Blood Iodine in Childhood. Gladys J. Fashena, New York.—p. 179.
Effects of Pressor Drugs and of Saline Kidney Extracts on Blood Pressure and Skin Temperature. E. M. Landis, H. Montgomery and D. Sparkman, Philadelphia.—p. 189.

Spontaneous Morning Alkaline Tide.—Barnett and Blume investigated the spontaneous morning alkaline tide in two normal subjects. With the subject at rest, without water or food, a curve of excretion of free fixed acid or alkali was obtained which may be regarded as basal under the conditions of the experiment. After about two hours during which there was a fairly constant rate of acid excretion, deviation of the curve in the direction of alkalinity began and continued to a maximal output of free alkali at from five to five and a half hours after waking. This period of spontaneous alkali excretion may continue until late in the afternoon, the initial morning level of acid excretion not being reached until 9 p. m. When diuresis was produced by drinking water, the period of diminishing acid excretion

began about an hour earlier. Strenuous exercise on the previous day resulted in almost complete obliteration of the morning alkaline tide. A short period of mild exercise diminished the alkali excretion temporarily. If the subject on arising walked quietly to the laboratory (one block) and worked there throughout the morning, the tide was practically obliterated. These deviations were not accompanied by a diminution in the output of urine. Increased acid excretion began about one and one-half hours after breakfasting immediately on waking and continued for an hour, after which the alkaline deviation began, the curve being steeper and rising somewhat higher than that of the control series. Increased excretion of acid after breakfast was seen in all experiments. When orange juice or small doses of sodium bicarbonate were taken late in the evening, there was a marked increase in the morning alkali excretion.

Journal of Experimental Medicine, New York

67: 345-494 (March) 1933

- Blood Plasma Proteins as Influenced by Intravenous Injection of Gum Acacia. G. P. Heckel, C. C. Erickson, C. L. Yuile and R. E. Knutti, Rochester, N. Y.—p. 345.
Immunologic Studies of Heat-Stable Substance Isolated from Tissues Infected with Vaccine Virus. R. F. Parker, Cleveland.—p. 361.
Toxemia of Pregnancy in Rabbit: II. Etiologic Considerations, with Especial Reference to Hereditary Factors. H. S. N. Greene, Princeton, N. J.—p. 369.
Effect of Formaldehyde on Pneumococci. R. J. Dubos, New York.—p. 389.
Carcinogenic Effect of Papilloma Virus on Tanned Skin of Rabbits: I. Description of Phenomenon. P. Rous and J. G. Kidd, New York.—p. 399.
Growth Inhibitory Substance for Influenza Group of Organisms in Blood of Various Animal Species: Use of Blood of Various Animals as Selective Medium for Detection of Hemolytic Streptococci in Throat Cultures. Elma Krumwiede and Ann G. Kuttner, Irvington-on-Hudson, N. Y.—p. 429.
Experimental Syphilis of Oriental Origin: Clinical Reaction in the Rabbit. Louise Pearce, Princeton, N. J.—p. 443.
Hepatic Dysfunction in Dogs Fed Diets Causative of Black Tongue. C. P. Rhoads and D. K. Miller, New York.—p. 463.
Absence from Urine of Pernicious Anemia Patients of Mosquito Growth Factor Present in Normal Urine. W. Trager, D. K. Miller and C. P. Rhoads, New York.—p. 469.
Metabolism of Lung Tissue in Experimental Lobar Pneumococcus Pneumonia in Dog. T. E. Friedemann and J. B. Graesser, Chicago.—p. 481.

Journal of Immunology, Baltimore

34: 185-280 (March) 1933

- *Demonstration of Antitoxin for Toxin of Clostridium Welchii in the Blood Serum of Patients and Dogs That Have Recovered from Spreading Peritonitis Complicating Acute Perforative Appendicitis. J. O. Bower, H. A. Mengle and N. F. Paxson, Glenolden, Pa.—p. 185.
Microscopic Observations on Behavior of Living Blood Vessels of Rabbit During Reaction of Anaphylaxis. R. G. Abell and H. P. Schenck, Philadelphia.—p. 195.
Further Studies on Permeability to Sodium Nitrate of Blood-Sulfocyanate Barrier in Experimental Poliomyelitis. E. H. Lennette and H. R. Reames, Chicago.—p. 215.
Studies of Antimeningococcus Serum: I. Development of Reactivity with Bacterial Fractions and with Agar in Serum of Horses and Rabbits. Grace M. Sickles and Christine E. Rice, Albany, N. Y.—p. 221.
Studies of Antipneumococcus Serum: I. Development of Reactivity with Bacterial Fractions and with Agar in Serum of Horses and Rabbits. Grace M. Sickles and Christine E. Rice, Albany, N. Y.—p. 235.
Conjugation of Haptens in Vivo: I. Phenolphthalein. S. R. Rosenthal, Chicago.—p. 251.
New and Rapid Quantitative Technic for Determination of Potency of Types I and II Antipneumococcus Serum. R. L. Libby, Pearl River, N. Y.—p. 269.

Antitoxin for Toxin of Clostridium Welchii in Blood After Peritonitis.—Bower and his associates believe that Clostridium welchii has an important part in spreading peritonitis of appendical origin. In ten apparently normal adults used as controls the incidence of antitoxin in the blood serum was zero, in nine patients convalescing or recovered from acute unperforated appendicitis the incidence of demonstrable antitoxin in the blood serum was 22.2 per cent, in fifteen patients with active or quiescent pelvic peritonitis the incidence of demonstrable antitoxin was 46.6 per cent and in twenty-eight patients suffering with or recovered from spreading peritonitis secondary to acute perforative appendicitis the incidence of demonstrable antitoxin in the blood serum was 69 per cent.

The authors have been using perfringens antitoxin in the treatment of cases of spreading peritonitis following perforative appendicitis with results which are encouraging and which will be reported later.

Journal of Lab. and Clinical Medicine, St. Louis
23: 441-552 (Feb.) 1938

Does Removal of Normal Gallbladder Affect Metabolism of Lipids? A. J. Atkinson and A. C. Ivy, Chicago.—p. 441.
Production of Phosphate Rickets in Rats in Presence of Vitamin D. L. K. Campbell, Chicago.—p. 448.
V. Nonrenal Azotemia. M. G. Wohl, R. W. Brust and H. Freed, Philadelphia.—p. 450.
Source of Urinary Indole. H. E. Carnes and G. T. Lewis, Atlanta, Ga.—p. 459.
Studies on Meningococcus Broth Filtrates. M. Cutts and Katharine B. K. Cutts, Providence, R. I.—p. 463.
Clinical Investigation of Increased Fragility of Erythrocytes. W. L. Randall, Hampton, Iowa.—p. 468.
Effect of Large Doses of Digitalis on Standard Metabolism. G. Nylin, Stockholm, Sweden.—p. 472.
Nonhemolytic Streptococcus Meningitis: Report of Case Successfully Treated with Sulfanilamide and Prontosil. J. W. Love, Alexandria, Va.—p. 482.
Consideration of Quantitative Relations Between Erythrocytes, Leukocytes and Hemoglobin of Blood. B. M. Hamil, M. W. Poole, Betty Munday, Marion L. Shepherd, Louise Emerson, Icie G. Macy, Detroit, and T. E. Ratford, Ann Arbor, Mich.—p. 488.
Factors Influencing Production of Guinea Pig Complement of Satisfactory Titer. J. E. Faber Jr. and L. A. Black, College Park, Md.—p. 496.
Diffraction Methods for Measuring Diameter of Red Blood Cell. R. L. Haden, Cleveland.—p. 508.
*Erythrocyte Sedimentation and Anemia: Preliminary Report. S. M. Bouton Jr., Ingleside, Neb.—p. 519.
"Integrative Action" of Mixtures of Simple Organic Substances in Oxidation-Reduction Phenomena Produced by Autoclaving. J. W. Williams, Cambridge, Mass.—p. 527.
Simple Colorimetric Method for Determination of Alcohol Concentration in Urine and Blood. A. G. Sheftel, Los Angeles.—p. 534.
Hinton Test for Syphilis: Third Study of Its Clinical Value in 3,000 Patients. L. Hollander, Clara R. Schlesinger and C. L. Schmitt, Pittsburgh.—p. 536.
Use of Paraffin Rings for Rapid Blood Typing. Clara M. Becton, Tulsa, Okla.—p. 539.
Blood Grouping for Major Blood Groups with Plasma and Oxalated Blood Cells. Clara M. Becton, Tulsa, Okla.—p. 541.
Method for Clearing Coagulated Serum-Blocked Berkefeld Filters. M. Vaisberg, Patchogue, N. Y.—p. 542.
Determination of Alcohol in Blood and Other Body Fluids. J. W. Cavett, Minneapolis.—p. 543.

Erythrocyte Sedimentation and Anemia.—Bouton contends that the relative number of erythrocytes in the plasma has a negligible effect alone on their rate of settling. Some factors affecting the rate of erythrocyte settling which are listed indicate the present status of sedimentation as nonspecific and only partly understood. Attempts at "correction" of the sedimentation rate by compensating for anemia, and especially the use of "conversion charts," represent pseudoaccuracy and in large part invalidate the readings. The "unmodified" sedimentation curve is a valuable diagnostic aid when correlated with other laboratory and clinical data. Selected curves are reproduced to show that the sedimentation rate and the red cell count may fluctuate independently of each other and even move in opposite directions in the same individual, in the course of a pathologic process. If a patient with a low red count but otherwise essentially normal manifestations shows a definitely pathologic sedimentation curve, the true ailment has not been determined and is of a serious nature.

Journal-Lancet, Minneapolis
58: 113-154 (March) 1938

The Syphilis Control Program in the North Central States. C. C. Applewhite, Chicago.—p. 114.
Control of Syphilis in North Dakota. M. M. Williams, Bismarck, N. D.—p. 118.
Syphilis Control in South Dakota. R. H. Wilcox, Pierre, S. D.—p. 123.
Clinical Aspects of Control of Syphilis. P. A. O'Leary, Rochester, Minn.—p. 125.
Syphilis Control: The Need for Efficiently Performed Serodiagnostic Tests. H. H. Hazen, Washington, D. C.—p. 127.
Experiences with Venereal Disease in Minnesota Penal Institutions. C. G. Arvidson, Minneapolis.—p. 131.
Routine Wassermann Test in College Students. R. E. Boynton and B. P. Davies, Minneapolis.—p. 134.
What the General Practitioner Should Know About Syphilis. S. E. Sweitzer, Minneapolis.—p. 136.
Clinical Study of Chronic Prostatitis with Hassett Treatment and Results. J. W. Ferrin, Chicago.—p. 137.
Student Health Service in the University. A. M. Schwitalla, St. Louis.—p. 139.

Journal of Nervous and Mental Disease, New York
87: 265-404 (March) 1938

Measurement of Intelligence. T. Braatoy, Oslo, Norway.—p. 265.
Clinical Significance of Lumbar Radiculitis and of Neuritis of Femoral Nerve. J. B. Doyle, Los Angeles.—p. 283.
Language Study in Schizophrenia. W. L. Woods, Iowa City.—p. 290.
Study of Porencephaly. A. Laird, Wellsboro, Pa.—p. 317.
Spongiblastoma of Diencephalon. Mabel G. Masten, Madison, Wis.—p. 322.
Rationale of Psychiatric Therapy. G. S. Sprague, White Plains, N. Y.—p. 325.

Journal of Urology, Baltimore
39: 223-390 (March) 1938

Diagnosis and Treatment of Malignant Renal Tumors: Historical Data. J. B. Gilbert, Schenectady, N. Y.—p. 223.
Classification of Renal Tumors with Observations on Frequency of Various Types. E. T. Bell, Minneapolis.—p. 238.
Roentgen Diagnosis in Ninety-Four Cases of Renal Tumor. E. R. Mintz, Boston.—p. 244.
Malignant Tumors of Kidney in Children. H. L. Kretschmer, Chicago.—p. 250.
Calcification of Renal Tumors and Its Relation to Prognosis. G. F. Cahill and M. M. Melicow, New York.—p. 276.
Status of Surgical and Irradiation Treatment of Wilms' Tumor: Report of Two Cases. W. H. McNeill Jr. and A. J. Chilko, New York.—p. 287.
Radiation Therapy of Tumors of Renal Parenchyma in Adults. A. L. Dean Jr., New York.—p. 303.
Surgery of Renal Tumors. G. G. Smith, Boston.—p. 308.
*Primary Ureteral Neoplasms: Report of Two Cases and Review of Literature. C. Rusche and S. K. Bacon, Hollywood, Calif.—p. 319.
Transvaginal Extraperitoneal Ureterorectal Anastomosis: Report of Case. G. L. Hunner, Baltimore.—p. 343.
Urinary Tract Disturbances Referable to Cervicitis. O. A. Nelson, Seattle.—p. 361.
Experimental Genital Tuberculosis in Rabbit. R. A. Moore and J. J. Smith, New York.—p. 367.
Urine in Renal Tuberculosis: Its Reaction and Associated Bacteria. K. A. Alcorn, Bay City, Mich., and H. A. Buchtel, Rochester, Minn.—p. 376.

Primary Ureteral Neoplasms.—Rusche and Bacon report two cases of primary ureteral tumor. In the first patient there was rapid dilatation of the right renal pelvis. When the first pyeloureterograms were made, the pelvis appeared normal; it was remarkably dilated from back pressure due to the tumor a month later. There is only one pathognomonic sign of ureteral tumor, the demonstration of a filling defect in the ureter by a pyelo-ureterogram. The first pyelo-ureterograms failed to disclose a filling defect in the ureter, nor did an intravenous ureterogram help; but, by using a ureteral catheter of small caliber and withdrawing it a few centimeters at a time from the pelvis to the bladder and taking a series of roentgenograms on the way down, clear evidence of the filling defect was obtained. Papillomatosis recurred in the bladder following removal of the ureter at the ureterovesical junction. In the second case a positive diagnosis of ureteral tumor was made from the pyeloureterograms alone. There was no obstructive pathologic change above the tumor in this case. With these two cases there were 136 cases of primary ureteral neoplasms (forty benign and ninety-six malignant) supported by adequate histologic proof in the literature up to the end of 1936.

Kansas Medical Society Journal, Topeka
39: 89-132 (March) 1938

A Thyroid Saga. L. S. Nelson, Salina.—p. 89.
Mucocle of the Appendix: Case Report with Review of Literature. P. E. Craig and C. H. Fortner, Coffeyville.—p. 92.
Rhabdomyosarcoma of Testicle. M. Gerundo and W. W. Corwin, Topeka.—p. 95.
Treatment of Low Back Pain. M. E. Pusitz, Topeka.—p. 98.

Kentucky Medical Journal, Bowling Green
36: 85-124 (March) 1938

Congestive Heart Failure. L. Bach, Newport.—p. 87.
Cancer of the Breast in Retrospect and Preview. L. Frank, Louisville.—p. 89.
Brief Résumé of Recent Literature Concerning the Present Status of Vitamins. J. Stites, Louisville.—p. 97.
Surgical Abdomen in General Practice. G. McClure, Danville.—p. 99.
Some Observations in Abdominal Surgery: Case Report. E. L. Henderson, Louisville.—p. 103.
What the General Practitioner Should Know About the Histopathology of Nasal Accessory Sinuses: Its Use as an Index and Guide in Diagnosis and Management of Nasal Sinus Disease. J. D. Heitger, Louisville.—p. 108.
Nasal Accessory Sinuses and Their Relation to Lower Respiratory Tract. C. T. Wolfe, Louisville.—p. 112.
Use of Mandelic Acid in Treatment of Pyelitis in Children. T. J. Marshall, Paducah.—p. 118.
Arachnidism (Spider Poisoning). H. Hagan, Louisville.—p. 120.

Maine Medical Journal, Portland

29: 43-64 (March) 1938

- Obstetrics in Scandinavia. Virginia C. Hamilton, South Harpswell.—p. 43.
- Urologic Complications of Fracture of the Male Pelvis: Report of Five Cases. C. N. Peters, Portland.—p. 45.
- Some Causes of Frequency and Urgency with No Urethral Obstruction. R. L. Huntress, Portland.—p. 47.
- Pyuria. E. W. Gehring, Portland.—p. 49.

Medical Annals of District of Columbia, Washington

7: 33-80 (Feb.) 1938

- Present Status of Metrazol Therapy of Schizophrenia: A Collected Abstract. Z. M. Levensohn, Washington.—p. 33.
- Calcium Therapy in Puerperal Infections. W. J. Cusack, Washington.—p. 41.
- Survey of Childhood Pneumonias. J. Rose, M. M. Schapiro and E. P. McLarney, Washington.—p. 44.
- Some Recent Contributions of Pathology to Clinical Medicine. L. W. Parr, Washington.—p. 47.
- *Morbid Anatomy of Bundle-Branch Block: Review of Literature, Report of Sixteen Cases with Necropsy Examinations and Report of Six Cases with Detailed Histologic Study of Conduction System. W. M. Yater, Washington.—p. 54.

Bundle Branch Block.—From a review of literature, necropsy observations of sixteen cases of bundle branch block and of six cases of bundle branch block studied by means of serial sections through the conduction system, Yater concludes that bundle branch block is usually due to coronary arterial disease or to hypertension resulting in left ventricular strain and impaired nutrition of the endocardium and bundle branch. Bundle branch block is usually associated with bilateral bundle branch lesions, although one branch is usually more seriously affected than the other and probably usually determines the essential form of the electrocardiographic curves. "Right" bundle branch block is probably usually due to rheumatic arteritis or rheumatic myocarditis. "Left" bundle branch block is probably usually due to degenerative cardiovascular renal disease, meaning coronary arterial sclerosis or arterial hypertension or both. A bundle branch need not be entirely destroyed at any level in order to produce electrocardiographic alterations that may be designated "bundle branch" block. Increased amplitude of ventricular complexes is not essential to the electrocardiographic diagnosis of bundle branch block. Any increase of the QRS interval beyond 0.1 second may indicate lesions of the bundle branches.

Medicine, Baltimore

17: 1-154 (Feb.) 1938

- *Ménière's Disease: Study Based on Examinations Made Before and After an Intracranial Division of Vestibular Nerve. S. J. Crowe, Baltimore.—p. 1.
- Clinical and Experimental Results with Thorotrast. D. L. Reeves and R. M. Stuck, Montreal.—p. 37.
- Pathologic Physiology of Chronic Cardiac Decompensation. M. D. Altschule, Boston.—p. 75.

Ménière's Disease.—Crowe studied 117 patients seen at the Johns Hopkins Hospital during the last nine years. In twenty-three the disease was relatively mild and no immediate operation was indicated; they have been reexamined from time to time. In ninety-four patients the attacks were disabling and they came to the hospital to have their vestibular nerve divided. The author believes that stimulation of the vestibular end organs is the cause of the sudden, violent attacks of vertigo, the sensation of surrounding objects whirling and the temporary staggering gait in Ménière's disease. When the central vestibular pathways are irritated by a new growth, the dizziness and incoordination are constant, there is no sensation of objects spinning in a rotary direction, and the periods of freedom from all vestibular symptoms so characteristic of Ménière's disease are absent. In other words, Ménière's disease is a form of aural vertigo that involves the cochlea as well as the static labyrinth. Ménière's disease is a combination of vestibular and auditory disorders. The diagnosis is made largely on the description of the attacks of vertigo. Too much emphasis placed on special examinations (the audiometer, tuning fork and vestibular tests) may lead to confusion. Of the 117 patients, seventy-four were men and forty-three women. Only ten of seventy-one patients had a history of otitis media at any time, and only two had an infection of the accessory nasal sinuses when admitted to the

hospital. Vertigo, the symptom that disables these patients, is always cured by an intracranial division of the vestibular nerve. The deafness and tinnitus are only slightly less disturbing.

Michigan State Medical Society Journal, Lansing

37: 201-296 (March) 1938

- Diagnostic and Therapeutic Value of the Medical Social Study of Cases. G. P. Reynolds, Boston.—p. 217.
- Examination of Cervix Uteri. H. H. Cummings, Ann Arbor.—p. 221.
- Strabismus. F. B. Fralich, Ann Arbor.—p. 226.
- Analysis of Contribution Made by Pneumo-Encephalography to Neurology. S. S. Bohn, Detroit.—p. 229.
- Problems in Venereal Disease Control. L. Shaffer, Detroit.—p. 232.
- The Education of the Public in Cancer. O. A. Brines, Detroit.—p. 236.
- Report of Observations of Insulin Hypoglycemic Shock Treatment in Psychotic Patients. L. C. Grosh Jr., Ypsilanti.—p. 238.

Military Surgeon, Washington, D. C.

82: 185-288 (March) 1938

- Hospital Ships of the World War: Lessons to Be Learned from Them. L. W. Johnson.—p. 185.
- The Italian Medical Service During Campaign in Ethiopia. P. Huard; translated by H. W. Jones.—p. 193.
- The Genesis of Cancer. S. E. Owen.—p. 218.
- Report on Ninth International Congress of Military Medicine and Pharmacy, Bucharest, Rumania, June 2-8, 1937. W. S. Bainbridge.—p. 225.
- Epidemiology in Mobilization. R. A. Hale.—p. 243.

Minnesota Medicine, St. Paul

21: 151-224 (March) 1938

- Acute Lymphocytic Meningitis. E. M. Hammes, St. Paul.—p. 151.
- Present Status of Insulin-Hypoglycemia Treatment in Schizophrenia. E. F. Rosenberg, F. P. Moersch, R. M. Wilder and B. F. Smith, Rochester.—p. 155.
- Medicine: Cooperative Business, Noncompetitive Profession. B. J. Branton, Wilmar.—p. 162.
- Medical Tour of South America. O. A. Olson, Minneapolis.—p. 164.
- *Congenital Megacolon Treated by Daily Hot Irrigations of Normal Saline Solution at 115 F. A. Friedell, Minneapolis.—p. 175.
- Compression Fractures of Spine. W. W. Nauth and P. A. Mattison, Winona.—p. 179.
- Clinical Test for Pregnancy. D. E. Morehead, Owatonna.—p. 182.

Congenital Megacolon Treated by Saline Irrigations.—Friedell suggests daily irrigations with physiologic solution of sodium chloride at 115 F. in the treatment of congenital megacolon. In three cases, treatment consisted of irrigation through a rectal instrument which permitted a controlled inflow and outflow. The treatment lasted from thirty to ninety minutes at first, depending on the response of the patient, but never less than twenty minutes. Several gallons of solution was used at one time. The solution was prepared at the bedside by dissolving the required amount of salt in a gallon of hot water. The irrigations were given slowly to avoid distention. In a few days the patients showed signs of improvement. Hurry or rough handling will frustrate all efforts and aggravate the condition. While in the three cases discussed normal intestinal function has been established, no claim can be made that all patients with megacolon can be cured. No damage should be done by trying this method first, and those ultimately requiring a sympathectomy will be better prepared by such irrigations.

New England Journal of Medicine, Boston

218: 285-324 (Feb. 17) 1938

- Loss of Blood in Certain Standard Operations for Malignant Disease. W. T. Buddington, Wrentham, Mass., and G. W. Taylor, Boston.—p. 285.
- *Use of Sulfanilamide in Gonorrhea in the Male: Preliminary Report and Warning. W. M. Brunet, C. H. Reinhardt and N. D. Shaw, Chicago.—p. 287.
- Serum-Protein Studies in Hyperthyroidism. E. C. Bartels, Boston.—p. 289.
- Hemochromatosis with Degeneration of Heart Muscle and Death from Congestive Heart Failure: Case. G. Blumer and R. R. Nesbit, New Haven, Conn.—p. 295.
- Newer Drugs for Treatment of Tapeworm Infestations: Some Results Obtained with Carbon Tetrachloride, Tetrachlorethylene and Hexylresorcinol. J. H. Sandground, Boston.—p. 298.

Sulfanilamide in Gonorrhea in the Male.—Brunet and his associates used sulfanilamide as an adjuvant in the treatment of several hundred acute and chronic, anterior and complicated cases of gonorrhea in the male. Sulfanilamide has not yet proved to be a specific for gonorrhea in any stage of the disease, but they do find that its conservative use has been of benefit in

a number of cases. They recommend that not more than 40 grains (2.6 Gm.) be taken daily. They prescribe two 5 grain (0.3 Gm.) tablets and an equal amount of sodium bicarbonate, to be taken every three hours. Even this small amount causes unexpected symptoms in a number of patients. Larger doses should be withheld until the pharmacology of the drug has been more thoroughly studied and its action understood, for it is possible that its injudicious use may induce mortality in a disease which ordinarily should have none. Overenthusiastic manufacturers must not continue to impose on the credulity of the practitioner, and skeptical physicians should not minimize the value of the drug without sufficient trial. The place the compound will occupy in medical practice must depend on time and the unbiased sifting of divergent clinical experiences and opinions.

New Orleans Medical and Surgical Journal

90: 511-574 (March) 1938

- Blood Supply of the Heart Wall. B. I. Burns and G. N. Ronstrom, New Orleans.—p. 511.
Physiology of Coronary Circulation. R. Ashman, New Orleans.—p. 514.
Diagnosis of Coronary Occlusion. J. H. Musser, New Orleans.—p. 518.
Surgical Treatment of Coronary Disease. A. Ochsner and M. DeBakey, New Orleans.—p. 520.
The Pathology of Coronary Disease. E. von Haam, New Orleans.—p. 528.
Occasion of the Naming of the Rudolph Matas Medical Library. C. C. Bass, New Orleans.—p. 532.
Use of Lipiodol in Certain Orthopedic Affections. G. C. Battalora, New Orleans.—p. 539.
Cystic Disease of Pancreas with Apparent Disappearance of Diabetes Following Operation: Case. W. A. Sodeman, New Orleans.—p. 543.
Kienbock's Disease: Report of Case. S. Hachette and C. V. Hachette, Lake Charles.—p. 546.
Isolated Fracture of Os Triquetrum. A. Mayoral, New Orleans.—p. 548.

New York State Journal of Medicine, New York

38: 323-402 (March 1) 1938

- Management of Intra-Ocular Foreign Bodies. D. F. Gillette, Syracuse.—p. 323.
Male Hormone: Effect on Nasal Mucosa of Man and Monkey. H. K. Tebbutt, Albany.—p. 332.
Extra-Otitic Meningeal Syndromes: Differential Diagnosis. E. D. Friedman, New York.—p. 335.
Protamine and Insulin Therapy: One Year's Experience. H. Pollack and H. Lande, New York.—p. 339.
Asthma and Tuberculosis. J. R. Wiseman and F. N. Marty, Syracuse.—p. 349.
Distribution of Types of Pneumococci: In Specimens from Normal Individuals and from Patients Having Pneumonia. J. Schleifstein, Albany.—p. 353.
The Open Safety Pin. M. S. Lloyd, New York.—p. 356.
Gynecologic Morbidity and Mortality: Analysis at Harlem Hospital—1936. P. M. Murray, New York.—p. 361.
Embolism Following Hemorrhoidal Injection. F. A. Marshall, New York.—p. 365.

Northwest Medicine, Seattle

37: 61-94 (March) 1938

- Pathologic Physiology of Spleen: Rationale of Splenectomy in Congenital Hemolytic Icterus, Thrombocytopenic Purpura and Early Banti's Disease. C. A. Doan, Columbus, Ohio.—p. 61.
Recognition and Treatment of Peripheral Vascular Occlusion. E. Holman, San Francisco.—p. 65.
Changing Concepts of Normal Nutrition. J. D. Boyd, Iowa City.—p. 71.
Topical Applications of Cod Liver Oil in Treatment of Ulcerative Colitis. I. A. Manville, Portland, Ore.—p. 75.
Tetanus. J. P. Brennan, Pendleton, Ore.—p. 77.
Colon and Rectal Cancer. B. R. Brooke, Portland, Ore.—p. 81.
Effect of Radiation Therapy on Metastatic Carcinoma of Bone. F. E. Butler and I. M. Woolley, Portland, Ore.—p. 84.

Cod Liver Oil Locally in Treatment of Ulcerative Colitis.—Manville devised a method of topical application of cod liver oil to the mucosa of the descending colon, sigmoid and rectum. The apparatus is composed of an ordinary paint gun as employed in the application of paint by the spray method. The only difference is that the nozzle is specially designed so that the tip will barely protrude beyond the end of a sigmoidoscope. The air pressure is adjusted by the use of an air pressure reduction gage so that it is barely sufficient to deliver a spray at the tip of the nozzle. The preliminary care of the patient is similar to that commonly employed for a proctoscopic or sigmoidoscopic examination with the exception that in addition a cleansing enema is used. The sigmoidoscope is inserted full length, the nozzle of the spray gun is then placed in posi-

tion and the pressure is released. The entire apparatus is slowly withdrawn, thus leaving a thin coat of cod liver oil applied directly to the mucosa. If necessary an oil (15 cc.) retention enema may be used at night. This method of treatment of ulcerative colitis substantiates the results given by Spiegel and the technic described is believed to be better. The few patients who have been treated have been distinctly benefited.

Oklahoma State Medical Assn. Journal, McAlester

31: 67-106 (March) 1938

- Facial Paralysis in Mastoiditis. W. W. Sanger, Ponca City.—p. 67.
Treatment of Carcinoma of Cervix Uteri. R. E. Myers, Oklahoma City.—p. 74.
Carcinoma of Cervix and Breast: Prognosis and Preferable Therapy. E. D. Greenberger, McAlester.—p. 79.
Cardiovascular Syphilis. F. R. Hood, Oklahoma City.—p. 82.
Congenital Deformities of Mouth and Face. G. H. Kimball, Oklahoma City.—p. 85.
Common Diseases of the Nails. J. H. Lamb, Oklahoma City.—p. 89.

Pennsylvania Medical Journal, Harrisburg

41: 455-564 (March) 1938

- *Ringworm and Moniliasis: Their Differential Diagnosis. J. G. Hopkins, New York.—p. 455.
Acute Intestinal Obstruction: Modern Methods in Diagnosis and Treatment. J. W. Stinson, Pittsburgh.—p. 473.
Vesical Neck Obstruction in Children. P. S. Rosenblum, Philadelphia.—p. 476.
Chronic Appendicitis. G. P. Muller, Philadelphia.—p. 480.
Treatment of Pertussis with Intranasal Specific Antigen. H. A. Slesinger, Windber.—p. 485.
Further Facts Regarding Work of Pennsylvania Emergency Child Health Committee. S. M. Hamill, Philadelphia.—p. 488.
Atrophic Rhinitis. A. J. Wagers, Philadelphia.—p. 490.
Focal Staphylococcal Nephritis. S. L. Grossman, Harrisburg.—p. 495.
Diagnosis and Treatment of Cancer of the Breast. W. B. Mosser, Kane.—p. 500.
Postmenopausal Bleeding from Uterus. F. E. Keene and F. S. Dunne, Philadelphia.—p. 503.
Diagnosis of Hyperthyroidism Masquerading as Heart Disease. C. E. Ervin, Harrisburg, and R. F. Dickey, Danville.—p. 506.
Thyroidectomy and Heart Disease. F. A. Bothe, Philadelphia.—p. 509.

Ringworm and Moniliasis.—Hopkins points out that 6,515 patients were admitted to the Department for Skin Diseases and Syphilis of the Vanderbilt Clinic in 1936 and that a diagnosis of some form of fungous infection of the skin was made in 442 cases. The common superficial fungous infections include two large groups—ringworm and moniliasis—and also a few other types. Ringworm infections are really two diseases: (1) ringworm of the scalp and glabrous skin, which is caused in the main by one group of fungi (the microspora, the favus fungus and the Endothrices) and (2) ringworm of the hands, feet, nails and groin, which is caused by another group. The prevention of contagion in each type of infection presents a distinct problem. It is difficult to predict from the appearance of a scalp lesion the type of fungus that will be recovered. On the hands and feet, however, the most varied types of lesion are caused by the same species. Different strains of one species vary greatly in virulence. Variations in the clinical picture seem to depend more on variations in reactivity of the patients than in virulence of the strains. Accurate diagnosis requires careful laboratory examination.

Psychoanalytic Quarterly, Albany, N. Y.

7: 1-170 (Jan.) 1938

- Some Observations on Transformation of Instincts. G. Zilboorg, New York.—p. 1.
Psychoanalytic Notes Relating to Syndromes of Asthma and Hay Fever. H. F. Dunbar, New York.—p. 25.
The Drive to Amass Wealth. O. Fenichel, Prague, Czechoslovakia.—p. 69.
Compulsive Handwashing: Case. G. S. Goldman, New York.—p. 96.
After the Analysis. Melitta Schmideberg, London, England.—p. 122.

Public Health Reports, Washington, D. C.

53: 329-362 (March 4) 1938

- Studies of Bactericidal Treatment of Milk Cans in Hot Air Cabinets. L. C. Frank, F. J. Moss, A. W. Fuchs, W. H. Haskell, M. M. Miller, R. C. Thomas and M. K. Havens.—p. 329.
Toxicology of Phenylchlorarsine: I. Experiments with Animals. H. C. Dudley and B. F. Jones.—p. 338.
Modified Cell for Dust Counting. C. E. Couchman and W. H. Schulze.—p. 348.

Rocky Mountain Medical Journal, Denver

35: 177-264 (March) 1938

- Reconstruction of the Injured Hand. S. Bunnell, San Francisco.—p. 194.
Occupational Diseases and Their Relative Importance to Medical Practice. R. T. Legge, Berkeley, Calif.—p. 200.
Intervertebral Disk Injury: Its Relation to Sciatica and Intervertebral Neuralgias: Cure of Sciatica by Sensory Root Rhizotomy. J. R. Jaeger, Denver.—p. 205.
Some Toxemias of Late Pregnancy. G. Heusinkveld, Denver.—p. 208.
Erysipelas in Infancy. R. J. McDonald Jr., Denver.—p. 213.
*Use of Ultraviolet Ray in Treatment of Erysipelas. P. M. Schunk, Sheridan, Wyo.—p. 216.
Reading Defects in School Children. G. H. Hopkins, Pueblo, Colo.—p. 218.
Pathologic Changes as Related to Causes of Death, as Demonstrated in 1,000 Autopsies. E. T. Thorsness, Denver.—p. 222.
Pneumonia: A Public Health Problem. T. J. Howells, Salt Lake City.—p. 225.
Drugs and Narcotics. Sister Rose Paul, Denver.—p. 226.

Ultraviolet Rays in Treatment of Erysipelas.—Schunk treated thirty-two cases of erysipelas with ultraviolet radiation. The ages of the patients varied from 1 month to 71 years. Thirteen were males and nineteen females. In twenty-eight the lesion was on the face or ear, in three on the leg and in one on the hand. No treatment other than ultraviolet radiation was used on any patient except one who received one dose of erysipelas streptococcus antitoxin. Thirty patients remained ambulatory and two were confined to bed. Definite improvement began within twenty-four hours after the first treatment in twenty-seven cases. The remaining five began to improve after the second or third treatment. Morbidity ranged from one to ten days with the exception of one patient, 71 years of age, who developed multiple abscesses in the subcutaneous tissues of his leg following subsidence of his erysipelas. There have been no deaths. The machine used is a mercury arc air cooled type which delivers an erythema dose in about one minute at a distance of 20 inches. The best response was obtained if an exposure of fifteen minutes at 20 inches was given at the time of the first visit. If the patient's skin was already tanned from being in the sunlight, the exposure was increased to twenty minutes. In infants or in people with a fair complexion the original dose was correspondingly reduced. Succeeding exposures were increased according to the amount of erythema obtained. From one to three treatments usually effected a cure if the dosage was sufficient. The entire lesion and a wide unlimited margin of normal skin were always exposed. Three patients had erysipelas more than once. The recurrences rapidly subsided under ultraviolet therapy, as did the original lesions.

South Carolina Medical Assn. Journal, Greenville

34: 63-90 (March) 1938

- Biopsy Methods and Their Application. T. M. Peery, Charleston.—p. 63.
Progress in Radiation Therapy During the Last Half Century. I. I. Kaplan, New York.—p. 65.
Availability of Laboratory Methods to the Physician in General Practice. Eleanor W. Townsend, Charleston.—p. 69.

Southern Medical Journal, Birmingham, Ala.

31: 233-338 (March) 1938. Partial Index

- Clinical and Experimental Study of Effect of Pancreatic Tissue Extract on Ureters. G. Carroll and F. G. Zingale, St. Louis.—p. 233.
Cyclopropane in General Surgery. T. L. Tidmore, Atlanta, Ga.—p. 237.
Obstetric Analgesia with New Barbiturate: Report of 200 Cases. F. V. Emmert and S. Goldschmidt, St. Louis.—p. 240.
Possible Relationship of Chronic Cystic Mastitis to Malignancy. J. A. Cahill and P. A. Caulfield, Washington, D. C.—p. 245.
Fallacies in Use of Artificial Pneumothorax in Treatment of Pulmonary Tuberculosis. J. S. Harter, Sanatorium, Miss.—p. 256.
Ectopic Pregnancy: Four Point Diagnosis with Posterior Colpotomy if in Doubt. R. Torpin, Augusta, Ga.—p. 260.
Postpartal Heart Failure. E. Hull and Eleanor Hidden, New Orleans.—p. 265.
Radiation Therapy in Primary Neoplasms of the Lung. R. E. Myers, Oklahoma City.—p. 275.
External Operation on Maxillary Sinus. A. M. Alden, St. Louis.—p. 282.
Differentiation of Streptococci and Its Relation to Sulfanilamide Therapy. Eleanor A. Bliss, P. H. Long and W. H. Feinstone, Baltimore.—p. 303.
Observations on Mode of Action and Clinical Use of Sulfanilamide in Urinary Tract Infections. P. H. Long and Eleanor A. Bliss, Baltimore.—p. 308.
Concerning Exophthalmos, with Especial Reference to Goiter. W. L. Benedict, Rochester, Minn.—p. 321.
Studies in Eighty Arthritic Cases with Associated Undulant Fever Findings. E. Goldfain, Oklahoma City.—p. 325.

Southwestern Medicine, Phoenix, Ariz.

22: 81-124 (March) 1938

- Artificial Fever Therapy: Critical Review. J. M. Rawlings, El Paso, Texas.—p. 81.
Changing Emphasis in Health Work. J. R. Scott, Albuquerque, N. M.—p. 83.
Pneumonia in the Southwest. L. R. Kober, Phoenix, Ariz.—p. 87.
Tetany Complicating Intestinal Obstruction. G. O. Bassett, Prescott, Ariz.—p. 89.
Thrombosis and Embolism. R. L. Hoffman, Flagstaff, Ariz.—p. 90.
Orchitis of Mumps Without Parotitis. J. R. Hild, Douglas, Ariz.—p. 94.

Surgery, St. Louis

3: 325-484 (March) 1938

- Effect of Volatile Base in Fluid Intestinal Contents on Dogs with Low Intestinal Obstruction. J. S. Hibbard, Wichita, Kan., and A. J. Kremen, Minneapolis.—p. 325.
Acute Intestinal Obstruction: I. Role of Bacteria in Closed Jejunum Loops. Sarah Haerem, G. M. Dack and H. Wilson, Chicago.—p. 33.
Id.: II. Permeability of Obstructed Bowel Segments of Dogs to Clostridium Botulinum Toxin. Sarah Haerem, G. M. Dack and L. I. Dragstedt, Chicago.—p. 339.
*Pneumoperitoneum in Perforations of Gastrointestinal Tract. J. R. Paine and L. G. Rigler, Minneapolis.—p. 351.
Peptic Ulcers Following Experimentally Produced Obstructive Jaundice: Consideration of Factors Concerned in Their Production. W. H. Hebert, Rochester, Minn.—p. 370.
Diffuse, Cavernous Hemangioma of Rectum: Report of Case and Record of Necropsy. L. A. Buie and J. P. Nesselroed, Rochester, Minn.—p. 379.
Subphrenic Abscess: Factors in High Mortality. L. J. Gogol, Los Angeles.—p. 386.
Urethral Urinary Extravasation. N. F. Ockerblad and H. E. Carlson, Kansas City, Mo.—p. 391.
Concerning Renal Function and Structure Following Trauma of Kidney: Experimental Study. J. H. Powers, Cooperstown, N. Y.—p. 397.
Newer Concepts in Treatment of Injuries to Ligaments of Knee Joint: Evaluation of Mauck Operation. M. T. Horwitz and A. J. Davidson, Philadelphia.—p. 407.
Posterior Dislocation of First Cervical Vertebra with Fracture of Odontoid Process. R. S. Reich, Cleveland.—p. 416.
Rectovaginal Cloaca: Report of Case and Simple Method of Reconstruction. C. W. Mayo and W. L. Butsch, Rochester, Minn.—p. 421.

Pneumoperitoneum in Perforations of Gastrointestinal Tract.—Paine and Rigler made observations on thirteen patients incidental to the production of a diagnostic pneumoperitoneum. Similar observations were made on five cadavers shortly after death in which it was shown that at times as small a quantity of gas as 5 cc. in the right subphrenic space can be demonstrated on a roentgenogram and 10 cc. can be seen regularly without difficulty. There have been sixty-two proved cases of perforation of the stomach, duodenum, small intestine and colon treated at the University of Minnesota Hospitals between 1927 and 1937. Forty-seven of the patients were given x-ray examinations, and gas outside the gastrointestinal tract was observed in 78.8 per cent. In thirty-eight cases of perforation of the stomach or duodenum, free gas was observed in twenty-eight (73.7 per cent). The reasons why gas is not seen in every case probably include (1) adhesions in the right upper quadrant of the abdomen, (2) location of the perforation below the fluid level of the fluid in the viscus, (3) absence of gas in the viscus at the time of perforation, (4) temporary plugging of the perforation with gastric or intestinal contents until the perforation is walled off, (5) prolapse of redundant mucosa into the perforation blocking the exit of gas and (6) technical failures in the x-ray examination. X-ray examination in the left lateral decubitus position was found to be of value in establishing the diagnosis of spontaneous pneumoperitoneum. If pneumoperitoneum is observed at all on the roentgenogram, it will be seen between the right dome of the diaphragm and the liver in 90 per cent of the cases.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

46: 127-182 (March) 1938

- Multiple Diverticula of Jejunum. E. M. Larson, Great Falls, Mont.—p. 127.
Purulent Pericarditis Due to Pneumococcus: Case Report. F. F. Atix, Lewistown, Mont.—p. 132.
Intraprostatic Injections. C. M. Greenslade, Dunedin, New Zealand.—p. 140.
Short Transverse Mesocolon as Complication of Gastric Surgery. H. K. Bonn, Los Angeles.—p. 141.
Origin and Development of Definitive Germ Cells in Domestic Fowl. J. M. Essenberg and J. H. Garwacki, Chicago.—p. 145.
Relation of Thyroid to Female Sex Function. G. C. Schaeffer, Portland, Ore.—p. 153.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London

50: 113-166 (March) 1938

Bacteriology of Impetigo Contagiosa. P. Tachau.—p. 113.
*Pemphigus Neonatorum (Bullous Contagious Staphylococcal Impetigo of the Newly Born): Account of Two Epidemics and Review of Literature. F. D. Hart.—p. 118.

Pemphigus Neonatorum.—Hart describes two epidemics of pemphigus of the newborn. *Staphylococcus aureus* was found in all cases, while attempts to grow streptococci failed. The effusion from the infected areas grew only *Staphylococcus albus* in two cases. One epidemic appeared to be started by an infant with rhinorrhea, from which a profuse pure growth of *Staphylococcus aureus* was obtained. The origin of the second was obscure but followed a mastitis in the child's mother. This also yielded a pure growth of *Staphylococcus aureus*. The organisms appeared to be indistinguishable from the usual strains of *Staphylococcus aureus*. Two deaths occurred at the close of the second epidemic from fulminating staphylococcal pneumonia. When the first case occurs, the ward, laundries and nurses should be thoroughly investigated, and the wards and laundries painted if necessary. The lesion is essentially bullous and the contents of the bullae are highly contagious. All premature babies and babies less than 6 days old are in grave danger in an epidemic. The lesions usually cause no systemic upset unless large and spreading and of an exfoliative type. No particular treatment seemed appreciably better than any other, though it was felt that ultraviolet radiation might have helped. Mercuriochrome, potassium permanganate baths, dusting powders and the like seemed of equal value. Provided the blister was snipped, the contents wiped up and the part kept from coming into contact with other parts, the natural tendency was to get well.

British Journal of Experimental Pathology, London

19: 1-94 (Feb.) 1938

Ectodermal Lesions Produced by Virus of Rous Sarcoma. E. V. Keogh.—p. 1.
Effect of Catalase on Respiration of Filtrable Organism from Sewage. Antoinette Pirie.—p. 9.
Influenza Virus on Developing Egg: VII. Antibodies of Experimental and Human Serums. F. M. Burnet and Dora Lush.—p. 17.
Comparison of Interchange of Body Fluids After Intravenous Injections of Crystalloids, Gum Acacia and Blood Serum. J. D. Robertson.—p. 30.
Chemotherapeutic Studies in Acridine Series: Relation Between Chemical Constitution and Biologic Action in Simple Amino-Acridines. A. Albert, A. E. Francis, L. P. Garrod and W. H. Linnell.—p. 41.
Cross Reactions of Vegetable Gums with Type II Antipneumococcus Serum. J. Marrack and Blanche Rosemary Carpenter.—p. 53.
Liquid Crystalline Preparations of Potato Virus "X." F. C. Bawden and N. W. Pirie.—p. 66.
Isolation of Antigenic Substances from Strains of *Bacterium Typhosum*. D. W. Henderson and W. T. J. Morgan.—p. 82.

British Journal of Ophthalmology, London

22: 129-192 (March) 1938

Significance of Heredity in Ophthalmology: Preliminary Survey of Hereditary Eye Diseases in Tasmania. J. B. Hamilton.—p. 129.
Accommodation in the Eyes of Mammals. J. Barrett.—p. 148.
Melanoma of Iris with Pathologic Findings. F. T. Tooke.—p. 153.
Colobomas of Optic Nerve Sheath in Rats. J. V. V. Nicholls and Katharine Tansley.—p. 165.

British Medical Journal, London

1: 321-370 (Feb. 12) 1938

Suggestions Relating to Study of Somatic Pain. T. Lewis.—p. 321.
Preliminary Account of Referred Pains Arising from Muscle. J. H. Kellgren.—p. 325.
*Intradermal Test for Vitamin C Deficiency. B. Portnoy and J. F. Wilkinson.—p. 328.
Fracture of Neck of Femur Treated by Oblique Osteotomy. T. P. McMurray.—p. 330.
Possible Discrepancy in Estimation of Ascorbic Acid in Urine. G. W. T. H. Fleming and T. E. Burrows.—p. 333.
Treatment of Infantile Pyloric Stenosis by Antispasmodics. J. V. Braithwaite.—p. 334.

Intradermal Test for Vitamin C Deficiency.—Portnoy and Wilkinson employed the cutaneous test used by Rotter for estimation of the vitamin C nutrition of the body. This test depended on the fact that 2:6-dichlorophenolindophenol is decolorized by

the tissues at a rate depending on the content of cevitamic acid. In "saturated" cases the dye disappears in less than five minutes, in "normal" cases in from five to ten minutes, and in "deficient" cases the dye takes longer than ten minutes for decolorization. Tests were made on 103 patients under observation for other purposes, and seventeen of these were reexamined after complete saturation with the acid. Conclusions are not attempted, but it is seen that a decolorization time greater than ten minutes apparently parallels a deficiency of vitamin C. This does not necessarily mean that the cutaneous test is a direct measure of the cevitamic acid content of the tissues, since other reducing substances, such as glutathione, will also cause a reduction of the dye. Nevertheless Rotter's test may furnish a useful rapid clinical test for vitamin C subnutrition and is worth further study.

East African Medical Journal, Nairobi

14: 351-384 (Feb.) 1938

Control of Bedbugs in Railway Coaching Stock by Regular Hydrocyanic Acid Fumigation. J. I. Roberts.—p. 354.
Uretero-Intestinal Anastomosis: Case. P. Ross.—p. 360.
*Prontosil in Treatment of Oriental Plague. J. A. Carman.—p. 362.
Acute Rheumatism in an African Born Child. R. V. Bowles.—p. 366.
Exomphalos: Case. D. Bell.—p. 367.

Prontosil in Treatment of Oriental Plague.—Carman tried prontosil (the disodium salt of 4-sulfamidophenyl-2'-azo-7'-acetyl-amino-1'-hydroxynaphthalene-3', 6'-disulfonic acid) in the treatment of six cases of bubonic plague. The strain of *Bacillus pestis* that has been responsible for the cases which have occurred during 1937 has manifested a high degree of virulence, since none of the first nine patients recovered. Of six patients subsequently admitted, three recovered. Morning and evening injections of from 2.5 to 5 cc. of prontosil were given. The evidence in favor of the assumption that prontosil is of value in the treatment of bubonic plague is sufficient to warrant a more extended trial.

Guy's Hospital Reports, London

SS: 1-128 (Jan.) 1938

Syphilis of the Lung. R. S. B. Pearson and S. De Navasquez.—p. 1.
*Uremia After Hemorrhage. A. S. Bookless.—p. 22.
Investigation into Metabolism of Cystine: I. G. C. Kennedy, D. C. Lewin and H. F. Lunn.—p. 34.
Culture for Tubercle Bacilli. D. P. King.—p. 47.
Statistical Error of Differential White Count. F. M. Goldner and W. N. Mann.—p. 54.
Simple Apparatus for Inhalation Therapy: Observations on Size of Particles in Spray, and Its Use in Asthma and Bronchitis. S. S. Suzman.—p. 66.
Pneumoperitoneum. P. J. Briggs and A. Hurst.—p. 74.
Hydatid Cyst of Lung: Case; Successful Removal. R. C. Brock.—p. 82.
Observations on Postoperative Thrombosis and Pulmonary Embolism. H. J. B. Atkins.—p. 92.
Two Cases of Graves's Disease with Muscular Atrophy: I. Graves's Disease with Muscular Atrophy and Ocular Paresis Cured by Thyroidectomy. H. J. Starling.—p. 117.
Id.: II. Graves's Disease with Muscular Atrophy Cured by Thyroidectomy. C. S. Darke and B. W. Hunt.—p. 121.
Id.: Commentary. W. R. Brain.—p. 125.

Uremia After Hemorrhage.—Bookless encountered thirteen cases in which a raised blood urea followed hematemesis and melena. In ten of them hemorrhage presumably arose from simple peptic ulcers; increasing pallor, attacks of faintness or melena often preceded the actual hematemesis. Every patient vomited blood and either fainted or collapsed immediately. On admission the hemoglobin varied between 30 and 80 per cent. Most of the patients had constipation for a week and any motions passed contained obvious altered blood; occult blood persisted in the stools for about three weeks. Hematemesis recurred in only one patient, and eight out of the ten recovered. In the other three patients hemorrhage was complicated by obstruction; vomiting recurred, anemia and dehydration increased and in spite of temporary phases of recovery the condition of the patients steadily deteriorated. The author believes that uremia after hematemesis is mainly due to increased breakdown of tissue protein, a process rapidly increased by sudden loss of blood and later maintained or further accelerated by dehydration. Wasting and dehydration are commonly associated. Experimentally pure dehydration may cause wasting. Adequate nutrition in the early stages mitigates secondary hemorrhagic shock without apparently restarting hemorrhage.

Indian Medical Gazette, Calcutta

73: 65-128 (Feb.) 1938

- Gastric Acidity in Health and Disease in India. L. E. Napier, R. N. Chaudhuri and M. N. Rai Chaudhuri.—p. 65.
Radiologic Examination of Stomach and Duodenum. G. Galstaun.—p. 74.
Opium Smoking Habit in India: Part I. General Survey. R. N. Chopra and G. S. Chopra.—p. 81.
Hydatid Disease in the Punjab. M. A. Sami.—p. 90.
Bacteriologic Study of Curdled Milk (Dahi). C. L. Pasricha, S. Lal and R. K. Goyal.—p. 94.
Arteriography. R. Demel.—p. 96.

Journal of Laryngology and Otology, London

53: 173-224 (March) 1938

- *Bone Formation in Scala Tympani of Otosclerotics. F. R. Nager and J. S. Fraser.—p. 173.
Faucial Lesions of Purpura. E. Watson-Williams.—p. 181.

Bone Formation in the Scala Tympani in Otosclerosis.—Nager and Fraser encountered bone formation in the scala tympani in only six petrous bones out of sixty-two cases of otosclerosis. Analysis of these cases indicates that the extent of the disease of the bone in the labyrinthine capsule of all these patients was large and not circumscribed but diffuse and including both windows. The bone marrow contained many dilated blood vessels, newly formed connective tissue and numerous osteoclasts. These patients were almost totally deaf, which condition is easily explained by the obliteration of both windows. The scala tympani was almost filled up in the more advanced cases. With the exception of one case, the lowest end of the scala tympani was filled up, including the cochlear aqueduct. In general the inner ear of these petrous bones did not show distinct signs of old inflammation, with the exception of a darker staining of endolabyrinthine fluids. They cannot accept the idea of a former labyrinth infection as a cause of these alterations but are inclined to believe that the otosclerotic process in the labyrinthine wall produces alteration or irritation of the endosteal layer and perilymphatic space which leads to circumscribed fibrous and bony production in the scala tympani. The otosclerotic process will penetrate even this newly formed bone. Such formation of bone in the inner ear has been found only in otosclerotic diseases of the labyrinthine capsule, whereas all other disorders of bone do not lead to these alterations.

Journal of Physiology, London

92: 1-130 (Feb. 16) 1938

- Response of Cat's Uterus to Hormones of Posterior Pituitary Lobe. J. M. Robson and H. O. Schild.—p. 1.
Effect of Drugs on Blood Flow and Activity of Uterus. J. M. Robson and H. O. Schild.—p. 9.
Heparin and Formation of White Thrombi. C. H. Best, C. Cowan and D. L. Maclean.—p. 20.
Effects of Vitamin A Deficiency in Pregnant Rats: Note. W. H. Newton.—p. 32.
Choline Esterase in Voluntary Muscle. A. Marnay and D. Nachmansohn.—p. 37.
Behavior of Glycogen After Diets Rich in Protein and in Carbohydrate. A. Mitski, I. Rosenbaum, L. Stein and E. Wertheimer.—p. 48.
Effect of Interaction of Ions, Drugs and Electrical Stimulation as Indicated by Contraction of Anterior Retractor of Byssus of *Mytilus Edulis*. I. Singh.—p. 62.
*Effect of Anterior Pituitary Extracts on Liver Fat of Various Animals. C. H. Best and J. Campbell.—p. 91.
Central Depressor Action of Adrenalin and Its Inhibition by Ergotamine. U. S. v. Euler.—p. 111.
Effect of Hypophysectomy on Blood Calcium and Phosphorus of the Rat. A. B. Anderson and E. G. Oastler.—p. 124.

Effect of Anterior Pituitary Extracts on Liver Fat.

Best and Campbell find that in fasting animals the anterior pituitary preparation causes a much greater increase in liver fat in guinea pigs and mice than in rats. Fasting alone produces a pronounced increase in liver fat in guinea pigs and mice. The amount of fat in the liver of the rat is frequently decreased by short periods of fasting. Female guinea pigs exhibit a greater increase in liver fat than males during the administration of the anterior pituitary preparation. The fat which accumulates in the liver of the fasting rat after injections of anterior pituitary rapidly disappears when the injections are stopped. Despite continued daily injections of the preparation to fasting rats or guinea pigs, a decrease in liver fat occurs after several days. In fasting rats or guinea pigs the preparation causes a fall in body fat. The preparation produces an increase in liver weight, which is due chiefly to deposition of fat and water. A slight increase in nonfatty solid material also occurs.

Lancet, London

1: 359-416 (Feb. 12) 1938

- Erythema Nodosum and Pulmonary Tuberculosis. A. Wallgren.—p. 35.
Diagnosis of Clubbed Fingers. J. L. Lovibond.—p. 363.
*Prognosis in Malignant Disease of Testicle: Follow-Up of Thirty Eight Cases. R. T. Payne.—p. 364.
Psychogenic Headache. H. Wilson.—p. 367.
Treatment of Schizophrenia by Induced Convulsions. J. E. Dhanjathy.—p. 370.
*Comparison of Insulin and Cardiazol Convulsion Therapies in Treatment of Schizophrenia. H. P. Strecker.—p. 371.

Prognosis in Malignant Disease of Testicle.—Payne bases his remarks on thirty-eight cases in which malignant disease of the testicle was treated by means of orchidectomy at St. Bartholomew's Hospital during a period of thirteen years. The diagnosis was confirmed pathologically. The orchidectomy was a local operation, and no patient was subjected to the radical operation. In addition to the orchidectomy, other treatment was carried out in some of the cases, including the excision of inguinal glands, the insertion of radon seeds to the abdominal glands and roentgen therapy. Of the thirty-eight all but four patients have been traced. In fifteen (46.9 per cent) of a possible thirty-two cases there was a cure rate of five years or more in a disease commonly regarded as almost uniformly fatal.

Comparison of Insulin and Metrazol in Schizophrenia.

—Strecker points out that up to last May, when an international conference on insulin and metrazol therapy was held in Switzerland, more than 2,000 patients had been treated with insulin hypoglycemia all over the world, and more than 600 with metrazol convulsions. The methods are not equally effective with all types of schizophrenia. Hebephrenia and dementia simplex both give relatively poor response to either method; in the other types the order of improvement with metrazol is generally inversely that with insulin. For example, catatonic excitement and paranoid types are more responsive to insulin, whereas stupor responds better to metrazol. This is of practical importance and shows the value of combining or of alternating the two methods. Angyal and Gyárfás, by supplementing the treatment of those refractory to metrazol by a period of insulin, found their remission rate increased from 44 to 63 per cent. The insulin and metrazol cases taken together (irrespective of their duration) show complete or incomplete remission in 40 and 37 per cent respectively, while a general survey of spontaneous remissions shows that, of a total of 2,460 patients, 236 per cent were reported at home well or improved. An economic fact of great importance is that the average stay in the hospital is much reduced both by insulin and metrazol treatment and recovery after these methods, as judged by insight and contact obtainable, is more complete than in spontaneous remission.

Medical Journal of Australia, Sydney

1: 233-276 (Feb. 5) 1938

- Occupational Diseases and Injuries of Eye and Workers' Compensation. M. Gardner.—p. 233.
Puerperal Infection Due to Hemolytic Streptococci. J. Chesterman.—p. 237.
*Source of Infection in Puerperal Sepsis. Beatrix Durie.—p. 242.
Brain Abscess. C. Cantor.—p. 245.
Psychiatry of the School Period. H. M. North.—p. 250.
Inversion of Uterus Following Childbirth. P. G. Brett.—p. 254.
Some Early References to Tuberculosis in Australia. J. B. Cleland.—p. 256.
The Management of Large Umbilical Hernias. L. M. McKillop.—p. 258.

1: 277-320 (Feb. 12) 1938

- Treatment of Certain Tumors Occurring in Region of Optic Chiasm. H. C. Trumble.—p. 277.
Pathologic Study of Tumors of Pituitary Region. R. A. Willis.—p. 287.
Role of Small Intracranial Blood Vessels in Pathology of Brain Conditions. O. Latham.—p. 292.
Rickettsia of "Q" Fever: Further Experimental Studies. F. M. Barrett and M. Freeman.—p. 296.
Prognosis in Coronary Occlusion. M. D. Silberberg.—p. 298.
Some Laboratory Experiments with Sydney Strain of Poliomyelitis Virus. W. C. Sawers.—p. 305.

Source of Infection in Puerperal Sepsis.—Durie believes that the chief danger is probably the throat carrier, for the human throat seems to be the natural habitat of *Streptococcus pyogenes*. It is therefore imperative to examine throat and nose swabs from all attendants who acquire tonsillitis or other respiratory infection or who have been in contact with a case of puerperal sepsis. Only one third of the hemolytic streptococci

found in the human throat are pathogenic. When the hemolytic group A streptococcus is isolated from a throat carrier by the precipitin test, that carrier is regarded as potentially dangerous. But the precipitin test does not provide a means of identifying a carrier as the source of infection in any particular case; it only shows that such a carrier is a possible source of infection. The source of infection in every case of puerperal sepsis should be determined. This identification of the source of infection is made possible by the existence of Griffith's types of hemolytic streptococci by the method of agglutination and agglutinin absorption. There are at least twenty-seven distinct types of hemolytic streptococci within group A. The hemolytic streptococcus is just as dangerous to the newborn as to the puerperal patient. The route of infection appears to be sometimes the respiratory tract.

Practitioner, London

140:225-336 (March) 1938

- Present Day Anesthetics. J. Blomfield.—p. 225.
Basal Anesthesia. H. K. Ashworth.—p. 232.
Anesthesia and Analgesia in Midwifery for General Practitioners and Midwives. J. Elam.—p. 243.
Anesthesia and the Child. F. Evans.—p. 254.
Anesthesia in Dentistry. T. B. Vaile.—p. 264.
Risks of Explosion in Anesthesia. J. K. Hasler.—p. 270.
Treatment of Whooping Cough. E. H. R. Harries.—p. 277.
Use of Artificial Pyrexia in Treatment of Disease. L. I. M. Castleden.—p. 285.
Rheumatism at the Menopause. K. Stone.—p. 293.
*Vitamin B₁ in Treatment of Neuritis. D. Stevenson.—p. 301.
New Treatment of Osteo-Arthritis. G. L. Scott.—p. 307.
Xenopus Pregnancy Test. E. Elkan.—p. 312.
Diet in Disorders of Cardiovascular System, Including Blood Disorders. H. Gainsborough.—p. 316.

Thiamin Chloride in Treatment of Neuritis.—Stevenson gave intramuscular injections of thiamin chloride into alternate upper arms, in an uninterrupted course, to thirty-five patients with resistant neuritis, sciatica and nervous debility when usual measures failed to give relief. The injections used were 1 cc. in bulk and contained either 1 or 2 mg., being equal to a strength of 500 and 1,000 international units. Six patients with sciatica and eight with neuritis were cured and six with sciatica, four with neuritis and three with nervous debility were greatly improved. As it is uncommon to find a pure neuritis without arthritis or fibrositis, the institution of some form of electrotherapy with or without massage is indicated.

Tubercle, London

19:193-240 (Feb.) 1938

- Tuberculosis in Hospital Workers: Summary of Canadian Data. Madge Thurlow Macklin.—p. 193.
Cod-Halibut Liver Oils in Experimental Tuberculosis of Guinea Pigs. K. Birkhaug.—p. 199.
Efficiency of Disinfectants in Tuberculous Sputums. A. Adams.—p. 208.
Influence of Gold Therapy in Pulmonary Tuberculosis on Blood Sedimentation Rate. J. M. M. Steven.—p. 211.
Epituberculosis. W. Fettes.—p. 218.

Chinese Medical Journal, Peiping

52:791-926 (Dec.) 1937

- *Vitamin C Content of Blood Plasma in Normal and Sick Children. F. T. Chu and C. Sung.—p. 791.
*Staphylococic Bacteremia in Children: Clinical Study of Forty-Three Cases. J. P. Wu.—p. 807.
Roentgenologic Study of Isolated Form of Pulmonary Tuberculosis. S. H. Wang, C. L. Hsu and C. Wu.—p. 817.
Roentgenologic Study of Paragonimiasis of Lungs. S. H. Wang and C. K. Hsieh.—p. 829.

Vitamin C Content of Blood Plasma in Children.—Chu and Sung believe that the determination of the vitamin C content of the blood plasma is a useful method of ascertaining the state of nutrition relative to vitamin C. It is more reliable than the estimation of the skin capillary resistance and more practicable than the study of urinary response to a test dose of the vitamin. By correlating the vitamin C content of the plasma with the type of urinary response to repeated daily test doses of the vitamin in eight cases, it was found that 0.85 mg. or more of vitamin C per hundred cubic centimeters of plasma correspond to the "relative saturation" of the body with the vitamin, that values between 0.5 and 0.8 mg. represent a range of "presaturation," and that any values below 0.4 mg. may be considered "deficient" with regard to vitamin C metabolism. All the breast-fed infants examined had a concentration of more

than 0.5 mg. of vitamin C per hundred cubic centimeters of plasma, while the infants who were artificially fed with slight or no addition of cabbage water had values ranging from 0.168 to 0.342 mg. When a considerable amount of orange juice or cevitamic acid was administered orally to the artificially fed infants who were not acutely ill, an increase of vitamin C in the plasma was invariably demonstrated. The vitamin C content of the plasma remained at a low level during the active stage of acute bacillary dysentery, even when antiscorbutic fruit juices had been given in a liberal amount. Parenteral administration of vitamin C is indicated for such patients. In cases of kala-azar, noma seems to be associated with a very low vitamin C level in the plasma. In the case of active tuberculosis the vitamin C content of the plasma was found to be invariably low, even when breast milk or orange juice had been included in the diet.

Staphylococic Bacteremia in Children.—Between 1921 and 1936 Wu encountered forty-three cases of staphylococic bacteremia in Chinese children up to 12 years of age in the Peiping Union Medical College Hospital. He emphasizes that staphylococic bacteremia is neither a rare condition nor always innocuous. The mortality for the whole group was 86 per cent and that for the children less than 2 years of age was 100 per cent, excluding two patients who left the hospital unimproved. About 69.8 per cent of the patients were up to 2 years of age. The infection could usually be traced to some sort of cutaneous lesions in the summer and respiratory diseases in the winter months. Cutaneous infections resulting from superficial abrasions or punctures for diagnostic and therapeutic purposes may at times lead to a fatal outcome. Although specific therapy is not available, energetic treatment along general lines does at times give gratifying results. A boy, 11 years old, with persistent bacteremia, recurrent osteomyelitis and arthritis, pneumonia with empyema and suppurative pericarditis, got well in about five months as a result of prompt and adequate surgical intervention of the local conditions and repeated blood transfusions. The ratio in the present series was 1.66 boys to one girl.

Japanese Journal of Obstetrics & Gynecology, Kyoto

21:1-100 (Jan.) 1938

- The Graefenberg Ring: Its Use and Abuse, with Case Report. H. E. Bowles.—p. 2.
Symptoms of Ovulation: Parts I and II. H. Ito.—p. 9.
Group Specificity of Liquor Amnii: First Report. Group Specificity of Liquor Amnii in Last Gravid Months. H. Ito.—p. 36.
Group Specificity of Fluid of Cyst of Hydatiform Moles. H. Ito.—p. 44.
Experimental Study on Relation Between Local Stagnation and Hyperemia and Malignant Tumor: Parts I to VII. K. Azuma.—p. 51.
Study on Diseases in Urinary Route and Bacilli Coli, Especially on Virulence of Bacilli Coli. S. Imamura.—p. 81.
Supplementary Clinical and Pathologic Study on Eclampsia, Nephropathia Gravidarum and Renal Complications in Pregnancy: Parts I and II. H. Kaji.—p. 86.
Results of Abdominal Cesarean Section in Kyoto Imperial University. M. Oshima.—p. 94.
The Decolorization Time of Methylene Blue in Hypertrophied Uterine Musculature After Injection of Pregnancy Urine: Parts I and II. G. Shimizu.—p. 97.

Journal of Oriental Medicine, Mukden, Manchoukuo

28:23-34 (Feb.) 1938

- Ascorbic Acid Content in Manchurian Paprika. M. Sugiura.—p. 23.
Absorption of Antidiphtheric and Antitetanic Antitoxin by Different Precipitins. T. Hiki.—p. 24.
Significance of Vitamin C in Occurrence of Edema: Report I. Value of Plasma Protein in Guinea Pigs Fed on Vitamin C Deficient Diet. J. Doi.—p. 25.
Experimental Studies on Influence of Vitamin C in Production of Edema: Report II. Change in Organs and Plasma Protein of Experimental Scorbutic Guinea Pigs. J. Doi.—p. 26.
Quincke's Edema: Case. S. Takagi.—p. 27.
Study on Application of Pail System for Disposal of Human Excreta in Manchuria. W.-T. Kuo.—p. 28.
Disinfection of Swimming Pools in Mukden: Parts I and II. W.-T. Kuo, S. Nagata and H. Kurihara.—p. 30.
Study on Changes in Ferments of Brassica Chinensis in Course of Its Conservation: I. Amylase and Catalase. T. Miyamoto.—p. 32.
Studies on Influence of Water Soluble and Alcohol Insoluble Parts and of Ethereal Oil of Allium Scorodoprasum on Serum Albumin and Rest Nitrogen of Blood Serum. T. Miyamoto.—p. 33.
Results of Studies on Influence of Water Soluble and Alcohol Insoluble Parts and Ethereal Oil of Allium Scorodoprasum on Composition of Blood. T. Miyamoto.—p. 34.

Gynécologie, Paris

27: 1-64 (Jan.) 1938

Genital Hormones in Clinic and Therapy of Gynecologic Disorders. P. Mocquot.—p. 5.

*Tubal Permeability in Adnexitis. C. Daniel, D. Mavrodin and A. Wanoff.—p. 15.

Tubal Permeability in Adnexitis.—Daniel and his associates review the literature on the permeability of the uterine tubes in adnexitis and report their investigations. Permeability of the uterine tubes in adnexitis is more frequent than is generally believed, amounting to 43.2 per cent of the cases. In cases studied by the authors, bilateral permeability was detected in 13.5 per cent and unilateral permeability in 24.3 per cent. Insufflation of the uterine tubes rendered them permeable in the course of insufflation in 5.4 per cent of the cases of adnexitis. In two cases of pelvic cellulitis, after delivery and abortion, the permeability of the uterine tubes indicated that the inflammation of the cellular tissues left the tube unharmed and consequently did not predispose to sterility, as occurs in inflammations of the uterotubal tract. In their observations in thirty-nine cases, it appeared to the authors that tubal insufflation, correctly and carefully employed, is a harmless method, which does not produce accidents even in acute and subacute forms of adnexitis. The permeability of the tube does not signify everything in the diagnosis of sterility; it also indicates the condition of the tubal wall, a fact which one of the authors studied on another occasion; nevertheless, on the basis of their observations they propose the systematic application of tubal insufflation, together with other methods of functional exploration, in all cases of adnexitis in order to recognize the possibility of fecundation.

Revue Française de Pédiatrie, Paris

13: 457-564 (No. 5) 1937. Partial Index

*Role of Bovine Bacillus in Etiology of Tuberculous Meningitis in Children. E. Lesné and A. Saenz.—p. 457.

Does Every Case of Hypertrophic Stenosis in Infants Require Operation? R. Baranski and M. Bussel.—p. 480.

*Copper Sulfate in Therapy of Anemia of All Ages. A. Canelli.—p. 494. Reactions of the Newborn Against Fettering. F. Stirnimann.—p. 496.

Three Cases of Intrabuccal Traumatic Hernia of Adipose Body of Bichat in Children. H. L. Rocher.—p. 503.

Revivescence of Cutirreaction with Tuberculin in Course of Nonspecific Infection in an Infant Who Had Been Vaccinated with BCG at Birth. S. A. Kostić-Yoksić.—p. 514.

Syndrome of Adams-Stokes in Infancy. A. G. Goldenberg.—p. 519.

The Bovine Bacillus and Tuberculous Meningitis.—Lesné and Saenz report the results of investigations on tuberculous meningitis in 155 children who had not been subjected to BCG vaccination at birth. It was necessary to eliminate eleven cases in which the culture of the cerebrospinal fluid was negative and in which the evolution of the disease diverted the diagnosis of tuberculous meningitis to that of curable serous or lymphocytic meningitis. The inoculation of the remaining 144 specimens of cerebrospinal fluid into the medium of Loewenstein always resulted in the culture of tubercle bacilli. In 135 of the cases the bacilli were of the human type and in nine of the bovine type. In the 135 cases with the human type, the appearance of the colonies in the Loewenstein medium required from eleven to twenty-nine days; the colonies were reddish, yellowish, dry, from 4 to 12 mm. in diameter, abundant and eugonic. On the other hand, in the cases in which the bovine bacillus was found, the colonies appeared extremely late, from thirty to seventy-two days being required. Moreover, these colonies were small, not pigmented, humid and dysgonic. The intravenous injection into rabbits of the strains of bovine bacilli confirmed the cultural diagnosis. All the animals died after from fifty-five to sixty-one days. The authors stress the great sensitivity of the Loewenstein medium and the fact that it permits differentiation between the human and bovine types of tubercle bacilli before the animal test is made. The bovine strains that were isolated in the aforementioned cases showed the characteristic properties inherent in this type of bacillus. No atypical or attenuated strains were found. By successive cultures on glycerinated potato mediums, the majority of the bovine strains, originally appearing in dysgonic colonies, were transferred into eugonic colonies. It was found that for guinea pigs the virulence of the bovine strains isolated from the children with tuberculous

meningitis was greater than that of the human strains. Discussing the etiologic aspects, the authors stress the following points: The age of the children attacked by the bovine bacillus varied between 18 months and 6 years, whereas the age of the children with the human strains extended to 15 years. Nearly all the children who were infected with the bovine bacillus were either raised or had lived for longer periods in rural regions. Indications for familial infections were lacking in the majority of children infected with the bovine strain. Moreover, in all the cases of meningitis with the bovine bacillus, the source of contamination was raw cow's milk, which had been ingested for long periods. The circumstances were quite different in the children in whom the tuberculous meningitis was caused by the human type of the tubercle bacillus. Of these, 92 per cent lived in or near Paris and only 3.17 per cent lived in rural districts. The majority had been nursed at the breast or were fed with sterilized cow's milk. Human contagion was found in the majority of cases. The authors conclude from these investigations that in France the bovine type of tubercle bacillus plays a much smaller part in the etiology of tuberculous meningitis than is the case in some other European countries; for instance, in England and Denmark (from 30 to 42 per cent). Nevertheless its etiologic importance is not negligible and necessitates prophylactic measures, such as the elimination of tuberculosis among cattle, prohibition of the feeding of raw milk to children and strictly controlled pasteurization.

Copper Sulfate in Treatment of Anemia.—Canelli says that for years he has used copper sulfate in the treatment of true anemias and of chlorosis and has obtained favorable, rapid and lasting results. He thinks that this little known therapy should be placed beside the better known treatments with iron, arsenic, manganese or liver, the more so since it can be employed in almost all ages. The oral mode of application is simple and the small volume, which is not disagreeable to the taste, is well tolerated by the gastrointestinal tract. Occasionally the effects of copper therapy surpass those of the customary anti-anemic measures. The copper stimulates the regeneration of the blood cells, increases the number of erythrocytes, influences the synthesis of hemoglobin and increases the hemoglobin content. Nevertheless the superior results should not lead to over-evaluation, because copper treatment also fails quite often. It can be used as an auxiliary measure with other antianemic medicaments. The author employs copper sulfate in a 1 per cent aqueous solution with various bases. He administers it immediately before the two principal meals, in doses of from 10 to 20 drops, for periods of ten days with intercalated periods of rest. The author found the copper treatment especially valuable in secondary anemias caused by rickets, inadequate diets, acute or subacute infectious diseases, intestinal intoxication, tuberculosis, syphilis, chronic renal lesions, hemorrhages and so on, also in chlorosis.

Revue Médicale de la Suisse Romande, Lausanne

58: 193-256 (March 25) 1938. Partial Index

Meningotyphoid of Swineherds or Disease of Young Swineherds. M. Roch.—p. 207.

The Practitioner and Prophylaxis of Tuberculosis. H. L. Pache.—p. 215.

*Osmotic Resistance of Erythrocytes in Course of Typhoid. F. Sciclounoff and R. Roch.—p. 234.

Influence of Mastication on Gastric Secretion. J. Bülle.—p. 246.

Osmotic Resistance of Erythrocytes in Typhoid.—Sciclounoff and Roch studied the resistance of the blood cells in patients with typhoid. They determined at the same time the coagulation time, the bleeding time and the retraction of the blood clot. They made their studies on four siblings aged between 13 and 18 years and made the following observations: 1. The resistance of the blood cells underwent a considerable diminution in all the patients; this reduction took place between the third and seventh weeks of the disease and involved the minimal as well as the maximal resistance. In three of the patients the reduction in the minimal resistance was preceded by a considerable augmentation. 2. Destruction involving approximately one fifth of the erythrocytes and of the hemoglobin was found to run parallel with the diminution in the resistance of the blood corpuscles. 3. The lowering of the resistance and the destruction were accompanied by a discharge of

urobilin and of urobilinogen in the urine. 4. In the measure that the cellular resistance diminished, the coagulation was prolonged. However, there was no considerable variation in the bleeding time and in the time required for the retraction of the blood clot. 5. The sedimentation speed of the erythrocytes was moderately augmented from the third week of the disease. 6. The described observations indicate that a fragility of the erythrocytes plays a part. This loss in resistance is probably provoked by the eberthian toxins. Without being able to prove it, the authors suppose that it is a toxicosis of the reticulo-endothelial system in general and of the bone marrow in particular. 7. The authors think that the administration of lipoids or of phosphatides may be helpful in these patients, because of the favorable action of these bodies on the resistance of the blood cells and on the reticulo-endothelial system in general.

Archivio Italiano di Chirurgia, Bologna

48:1-180 (Jan.) 1938

- Surgery of Osteomas of Perifacial Pneumatic Cavities. E. Malan.—p. 1.
Experimental Osteo-Articular Tuberculosis from Bovine Bacillus. C. Carli.—p. 125.
*Lateroterminal Anastomosis of Nerves. R. Gatta.—p. 155.
Prosthesis of Common Bile Duct by Direct Implantation of Rubber Tube in Duodenum. F. Virgilio.—p. 172.

Lateroterminal Anastomosis of Nerves.—Gatta experimented on young rabbits. In the first group of animals the end of the peripheral segment of the sectioned peroneal nerve was introduced into the normal tibial nerve and fixed there by a suture. In the second group of animals 3 or 4 mm. of the scarified end of the peripheral segment of the sectioned peroneal nerve was placed in contact with a longitudinal incision in the normal tibial nerve and fixed there by two stitches, 3 or 4 mm. apart. The anastomosis was performed immediately after sectioning of the peroneal nerves in the first and second groups of the experimental animals. In the third group the anastomosis was done by the technic of side by side contact of the nerves, which was used in the animals in the second group, but it was done one month after section of the peroneal nerve. In all the animals the nervous stimulations of the central segment of the sectioned nerve were deviated away from the peripheral segment. The author concludes that the fibers of a sectioned motor nerve regenerate themselves by the lateroterminal anastomosis to a normal nerve which has motor fibers. Regenerated nervous fibers originate at the anastomosing segment of the normal nerve and progress peripherally to the anastomosed cut nerve. Regeneration induces complete reestablishment of nervous supply in both anastomosing and anastomosed nerves. It is followed by reappearance of functions in the previously denervated territory. Early in the experiment there is a slight muscular hypotrophy. The anastomosis by side by side contact of the nerves gives better results than the introduction of the end of the paralyzed segment of the nerve into a normal nerve.

Lattante, Parma

9:97-140 (March) 1938

- *Bromine Contained in Blood and in Cerebrospinal Fluid of Normal Children. I. Gatto.—p. 99.
Embryonic Umbilical Hernia: Case. A. Pafumi.—p. 110.
Complete Transposition of Viscera with Congenital Heart Disease. F. Lo Presti-Seminario and E. Savatteri.—p. 115.
Chronic Hilar-Mediastinal Lymphopathy in Children. D. Eller.—p. 118.

Bromine in Blood of Normal Children.—Gatto says that it is obvious after reviewing the literature that the investigations on the amount and physiologic importance of bromine in the blood and in certain fluids of the body have given conflicting results up to the present. The blood of infants, immediately after birth, contains bromine which shows placental origin. Bromine is present also in the blood of the umbilical cord. After birth, infants receive bromine in mother's milk or in artificial feeding. The author performed determinations of the amount of bromine in the blood and the cerebrospinal fluid of normal infants and children. He resorted to Kirchhof's method, which is a modification of Indovina's, in which 2 cc. of a 5 per cent sodium paratoluenesulfonchloranide (chloramine) is used, instead of the same quantity of water charged with chlorine, which is used in the original method. The author concludes that the amount of bromine in the blood of normal infants and children varies between 519 and 958 micrograms for each

hundred cubic centimeters of blood. Variations of the amount of bromine in the blood, within normal figures, are more restricted in the blood of infants who are fed human milk than in those of infants who are fed artificial or mixed food and of children. The amount of bromine in the blood depends on the amount ingested with food. Infants who are fed human milk ingest a fixed amount of bromine in the milk daily. In artificial or mixed feeding and in the diet of children the amount of bromine in the food is not the same every day. The ratio of bromine in the erythrocytes and in the plasma varies between 0.65 and 0.75. Bromine in the blood accumulates in the erythrocytes with a greater tendency than chlorine. The amount of bromine in the cerebrospinal fluid varies between 95 and 320 micrograms for each hundred cubic centimeters of the fluid. It is greater in the cerebrospinal fluid of infants than in that of children. This is due to the fact that the barrier of the central nervous system has a lower threshold to the passage of bromine from the blood during early life than later on, as the children advance in age.

Minerva Medica, Turin

1:225-248 (March 3) 1938

- *Aseptic Meningitis Associated with Autohemotherapy and Autocerebrospinal Fluid Treatment in Multiple Sclerosis. G. Tanfani.—p. 225.
Causes of Sterility of Gastric Secretion. A. Sebastianelli.—p. 229.
Traumatic Luxations of Elbow and Their Results in Young Persons. L. Raugno.—p. 232.
Useful Modification of Hagedorn-Jensen Micromethod for Determination of Glycemia. A. Midana.—p. 237.

Treatment of Multiple Sclerosis.—In forty cases of multiple sclerosis Tanfani resorted to Boschi's treatment, which consists in the production of aseptic meningitis followed by intramuscular injections of the patient's own blood and cerebrospinal fluid. Aseptic meningitis is produced by injecting from 2 to 5 cc. of double distilled water in the spinal canal. The patient's own blood, in small progressive amounts not specified by the author, is injected six or seven hours later. The amount of cerebrospinal fluid is 5 cc. for each injection. The total number of treatments varies from two to four. Intervals of two or three weeks are allowed to pass between the treatments. The author's cases were grave and of long duration. Recovery (except for the organic defects) took place in three cases, great improvement in six cases and moderate improvement in thirteen cases. The treatment failed in eighteen cases. The reaction consists of headache, vomiting, pain in the extremities and vertebral column, flexor spasms, fever between 39 and 40 C. and intense lymphocytosis of the cerebrospinal fluid. The benefits of the treatment are evident after the second or third injection in the majority of cases. The best results of the treatment are attained in patients who show an intense meningeal reaction and no tendency to spontaneous reactions, especially if the disease is of the cerebellopyramidal type and has lasted for less than six years. The satisfactory results of the treatment cannot be mistaken for spontaneous reactions.

Policlinico, Rome

45:105-152 (March 15) 1938. Surgical Section

- Benign Tumors of Knee from Trauma. A. Bonaccorsi.—p. 102.
*Postoperative Hepatorenal Syndromes. G. B. Culmone.—p. 114.
*Microscopic Changes from Intra-Arterial Injections of Gentian Violet. E. Repetto.—p. 134.
Clinical Pathogenic and Surgical Study of Three Cases of Intervescal-Prostatic Diaphragm Secondary to Transvesical Prostatectomy. D. Torre.—p. 143.

Postoperative Hepatorenal Syndromes.—Culmone states that the acute hepatonephritis which frequently follows surgical procedures, especially on the abdomen, the liver and the biliary tract, is a form of toxic hepatonephritis by which the metabolisms of proteins, sugars, chlorides and water are disturbed and the acid-base equilibrium is destroyed. The disorder may develop regardless of the type of anesthesia used. It is due to the presence of latent chronic insufficiency of the liver and the kidney in association with constitutional intolerance of the structures for certain toxic substances. The presence of latent hepatorenal insufficiency and constitutional intolerance explains the benign or fatal evolution of hepatic and liver insufficiency which complicates operations on the abdomen. In the presence of the pathogenic factors mentioned, toxic anesthetic and cytolytic products induce irreversible lesions in the parenchyma of

the liver and the kidney. The lesions form organic autolysates of great toxicity, which have reciprocal tropism and an aggravating effect on the lesions of either structure. Grave biochemical and humoral changes, which are incompatible with the preservation of the patient's life, follow. Myocardial and circulatory disturbances, coma and vasomotor collapse are terminal symptoms. Clinical preoperative examination of the structures does not reveal latent chronic, hepatic and renal insufficiency. Constitutional intolerance, if it is present, is common to the liver and the kidney, which have a common phylogenetic origin. The author's statements are based on a review of the literature and on the clinical study of seven cases which he reports.

Microscopic Changes from Intra-Arterial Injections of Gentian Violet.—Repetto experimented on rabbits that had been given an intra-arterial injection of 0.25 cc. of a hydro-alcoholic solution. The solution was prepared with 1 Gm. of gentian violet, 10 Gm. of alcohol and 100 cc. of water. The injection was done in the femoral artery, which was examined within two and twelve days after. In all cases the injection induced grave alterations in the limb. There were intense edema, cutaneous ecchymoses and large zones of deep cutaneous necrosis. Microscopic study revealed peeling of the endothelium of the arteries, intense edema, leukocytic infiltration, dilatation of the vessels of the skin and of the subcutaneous and muscular tissues, diffuse hemorrhages, necrosis of the epidermis and deeper layers of the skin and degeneration of the muscular fibers. The author warns against the use of intra-arterial injections of gentian violet in the treatment of infections of the limbs.

Prensa Médica Argentina, Buenos Aires

25: 479-532 (March 9) 1938

Mathiew's Induction in Grave Gestosis. J. Bazán and F. A. Uranga Imaz.—p. 479.

Boldireff's Curves of Neutralization in Diagnosis of Gastroduodenal Ulcers. J. J. Beretervide, T. J. Masoch and D. Barrios.—p. 485.

Diagnostic Importance of Gastrosocopy in Chronic Gastritis Unrecognized by Roentgen Examination. H. E. F. Stocker.—p. 508.

*Triangular Parapericardial Roentgen Shadow. A. Trimani.—p. 512.

Triangular Parapericardial Roentgen Shadow.—Trimani found the parapericardial triangular shadow at the left lower arch of the roentgen silhouette of the heart in fifty-seven of 3,568 teleroentgenograms and 400 orthodiagrams which he studied. The author states that the shadow is due to the presence of a ligament or band which joins the juxta-apical portion of the fibrous pericardium to the left hemidiaphragm. Polycyclic conglomerates of fat tissues may accumulate at the level of the left diaphragmatic-pericardial angle. In rare cases the fat tissues may be a coadjuvant factor for the formation of the shadow, which may originate in the presence of fat tissues only in exceptionally rare cases. In such cases the external edges of the shadow are evanescent and irregular. The triangular parapericardial shadow may be present in the roentgen silhouette of the heart of patients who are suffering from cardiovascular diseases, especially sclerosis and thrombosis of the coronary arteries. It may be present rarely in the roentgen silhouette of patients with diseases other than cardiovascular and in the silhouette of normal hearts. It appears in persons over 40 years of age, thin or with diminished body weight. It has never been found in the silhouette of the heart of children or of patients suffering from heart diseases with enlargement of the heart. The appearance of the shadow depends on the position of the diaphragm and the presence or absence of enlargement of the heart. A low position of the diaphragm favors the appearance of the shadow, whereas the enlargement of the heart prevents it.

Nervenarzt, Berlin

11: 57-112 (Feb. 15) 1938. Partial Index

Cerebral Metastases. C. M. Behrend and E. Schilf.—p. 57.

Neurologic Symptoms in Spondylolisthesis. A. Heinrich and K. Krupp.—p. 63.

Supravital Staining of Cells of Cerebrospinal Fluid. W. Ederle.—p. 66.

*Differential Diagnosis of Epileptic Convulsions on Basis of Observations on Cerebrospinal Fluid. K. F. Scheid.—p. 71.

Differential Diagnosis of Epilepsy.—Scheid directs attention to the differentiation between genuine epilepsy and attacks of convulsions that develop as the result of anatomic lesions of the brain. Examination of the cerebrospinal fluid is important in this differentiation because the psychic changes may not be

clear and the neurologic symptoms are often negative in symptomatic epilepsy. The author tries to show what diagnostic conclusions can be drawn from the cerebrospinal fluid. Of sixty epileptic patients, fifty-four had normal cerebrospinal fluid. In only six patients, or 10 per cent, did the cerebrospinal fluid show pathologic aspects. In three cases the protein content was increased but there were no pathologic colloid curves. Increase in the number of cells without pathologic colloid curves was also observed in some cases of genuine epilepsy. This manifestation proved to be the result of an attack in most of the cases. Pathologic colloid curves suggest the symptomatic nature of the attacks. The colloid curves are never pathologic in cases of genuine epilepsy but they are in about half of the cases of symptomatic epilepsy.

Strahlentherapie, Berlin

61: 201-400 (Feb. 19) 1938. Partial Index

Treatment of Inoperable Gastric Carcinoma. H. Regelsberger.—p. 201.
Ray Therapy in Advanced Stages of Malignant Diseases. E. A. Pelt.—p. 233.

Roentgen Treatment of Tumors of Hypophyseal Region. J. Erdélyi.—p. 241.

Value of Determination of Reticulocytes in Examination of Personnel of Roentgen Departments. K. Mardersteig.—p. 279.

*Question of Short Wave Treatment of Actinomycosis. W. Dieker.—p. 338.

New Procedure for Determination of Quality of Roentgen Rays. K. Heckmann.—p. 372.

*Atypical Reactions of Skin to Treatment with Borderline Rays. F. Kalz.—p. 377.

Short Wave Treatment of Actinomycosis.—Dieker points out that Liebesny, after the accidental discovery of the favorable effect of short waves on cutaneous actinomycosis, employed the short wave therapy in seven other cases of cutaneous actinomycosis and obtained favorable results in six out of eight cases. Dieker employed short waves (6 meters) unintentionally in a case of primary actinomycosis of the lungs and pleura. The short wave treatment was employed on the basis of the diagnosis of an encapsulated pleural empyema. Later, however, it was discovered that the process was an actinomycosis. When the short wave treatments failed to produce the expected results, the patient was subjected to an operation which definitely established the diagnosis of actinomycosis. Although the operation produced temporary improvement, the patient finally died. In the final evaluation of this case the author debates whether the unfavorable outcome was the direct result of the short wave treatment or of the inadequate defense powers of the organism. In view of the extremely poor general condition of the patient, the author is inclined to accept the second possibility and thinks that, since there is no other treatment which holds out a better promise of success in this form of actinomycosis than does short wave treatment, it might be tried again in cases of this type, particularly if they come up for treatment at an earlier stage than did the reported one.

Atypical Reactions of Skin to Borderline Rays.—Kalz describes two cases of abnormal reaction of the skin to irradiation with borderline rays. The first patient, aged 35, for two years had a mild eczema on both cheeks and on the forehead which proved refractory to treatment with ointments. In order to avoid the formation of an erythema, the author applied the borderline rays in fractionated doses. He gave eight irradiations of 100 roentgens each at three day intervals. After these irradiations an intensive erythema developed, which however did not involve the irradiated fields uniformly but rather appeared in areas with jagged outlines. On superficial observation they resembled a naevus flammeus. The erythema gave way to a rapidly disappearing pigmentation. In view of the fact that the outlines of the erythema did not coincide with the fields of irradiation, the author assumes the existence of a hypersensitivity. However, the sensitivity tests revealed no abnormality. Nevertheless, this case proves that there are patients in whom otherwise harmless doses may result in undesirable skin reactions. The second patient, a woman aged 34, was severely affected with acne vulgaris. Local treatments, courses of yeast and endocrine injections were used without success. Under the influence of fractionated treatment with borderline rays (9 times 150 roentgens at three day intervals) the acne pustules healed, but eight days after cessation of the irradiations a slight erythema devel-

oped and shortly afterward small, light red nodules appeared which persisted unchanged for about three weeks. After they had existed for about four weeks, small depressions became noticeable in the center of the nodules and magnification disclosed small telangiectasis. After two months the lesions were cured, leaving central scars and pigmentations. An irradiation impairment with such clinical aspects has not been reported heretofore. However, in view of the fact that the disorder developed together with the irradiation erythema and was restricted to the irradiated fields, it must be assumed that it was at least provoked by the irradiation.

Zeitschrift für Tuberkulose, Leipzig

79: 209-288 (Feb.) 1938. Partial Index

- *Question of Immunity and Allergy in Tuberculosis. A. Nagel.—p. 209.
- *Prognosis and Treatment of Open Pulmonary Tuberculosis in Children and Young Persons. K. Ellinghaus.—p. 222.
- Clinical Aspects of Pulmonary Actinomycosis and Tuberculosis. F. Baudach.—p. 228.
- Isolated Occurrence of Laryngeal Tuberculosis. Maria-Therese Charlier.—p. 242.

Immunity and Allergy in Tuberculosis.—Nagel describes experiments conducted to detect relations between allergy and immunity. In the first series, eighty guinea pigs with severe tuberculosis and a number of controls were given intravenous injections of varying doses of virulent and killed tubercle and colon bacilli. A comparison of the organs of the animals with the severe tuberculous-fibrous changes with those of the control animals revealed no hyperergic-allergic reactions. To be sure, shock often followed by death was observed in the tuberculous animals that were treated with large doses. The necropsy of these animals disclosed severe parenchymatous hemorrhages in the organs and inflation of the still existing pulmonary tissues. The author thinks that these shock effects may be the result of suddenly increased toxic actions on a sympathetic which had become hyperirritable as the result of the tuberculous infection. This irritability can be increased also by colon bacilli. In the second series of experiments, twenty-three animals were given a preliminary treatment with a strain of bacilli of low virulence. After forty days these animals and a number of controls were given intravenous injections of a mixed vaccine containing highly virulent living and killed bacteria. In some of the experiments epinephrine was added in order to influence possible allergic-hyperergic reactions. The animals were killed after a varying number of days. In comparison with the controls, the animals having received the preliminary treatment showed a hardly noticeable increase in the general reaction. In the immunized animals, the development of the tuberculosis was noticeably retarded. In the third series of animals the author investigated the possible effect of local or general anesthesia on the development of hyperergic-allergic reactions. It was found that the anesthesia exerted no noticeable influence on the tissue reactions. Since hyperergic-allergic reactions were virtually absent, the author concludes from his observations that allergy and immunity represent two entirely different phenomena.

Open Tuberculosis in Children.—Ellinghaus presents a statistical report of eighty-two cases of open pulmonary tuberculosis in children that were treated at a sanatorium during the years 1928 to 1935. There were twenty-four boys and fifty-eight girls. Of the total number, forty-eight (58.5 per cent) had died by May 1, 1937; in twelve (14.6 per cent) the pulmonary process had become exacerbated; improvement or arrest had been obtained in twenty-one (25.6 per cent). Of the twenty-four boys, eleven (45.8 per cent) died; of the fifty-eight girls, thirty-seven (63.7 per cent) died. Thus the boys seem to have a more favorable prognosis than the girls. The author points out that his statistics show great similarity to those presented by Klare about open pulmonary tuberculosis in children and young persons, except that, according to Klare's figures, there is no essential difference in the prognosis as regards the two sexes. Klare, like Ellinghaus, observed a higher incidence of open pulmonary tuberculosis in girls than in boys. The author says that for children too the most promising procedure is collapse therapy, especially unilateral and bilateral pneumothorax. He thinks that for the duration of the pneumothorax therapy, perhaps for several years, the children should remain

in an institution unless the home conditions are especially favorable and permit regular refilling of the pneumothorax and careful supervision. Schooling and manual training of the children during this time of institutionalization can be handled most successfully in connection with a work sanatorium for adults.

Wiener Archiv für innere Medizin, Vienna

32: 47-96 (Feb. 28) 1938

- Thrombopathy: Case. H. Fleischhacker and P. Grüneis.—p. 47.
- *Protamine Zinc Insulin and Diabetes Refractory to Ordinary Insulin. M. Taubenhaus.—p. 55.
- Genesis of Anemia in Pulmonary Tuberculosis. E. Pilgerstorfer and H. Seyfried.—p. 63.
- *Work Test and Vasodilating Substances in Intermittent Claudication. F. Kisch.—p. 71.
- Aleukemic Lymphadenosis with Hyperchromic Megalocytic Anemia. W. Christen and S. Greif.—p. 85.

Protamine Zinc Insulin and Diabetes Refractory to Ordinary Insulin.—Taubenhaus says that not much attention had been paid to the effect of protamine zinc insulin in insulin resistant cases of diabetes. The author raised the question whether such cases could be treated with protamine zinc insulin in which, as the result of simultaneously existing complications (hypertension, coronary sclerosis, hemorrhagic retinitis and so on), ordinary insulin, according to the opinion of some investigators, should be given not at all or only in small doses. These cases generally show a persistently high blood sugar content but only a slight glycosuria, and small amounts of ordinary insulin often are without effect. The author reports four cases of this type. Treatment with ordinary insulin had been without effect, but protamine zinc insulin produced surprisingly favorable results. The author is unable to give a satisfactory explanation of this phenomenon but suggests that protamine zinc insulin, as the result of its slow action, elicits only a weak counter regulation and thus forces a reduction in the blood sugar. The action of protamine zinc insulin resembles the endogenic action of insulin more than does that of ordinary insulin. An increase in the sensitivity to insulin seems to have taken place, which may have been effected by the zinc. Further observations convinced the author that the favorable effect of protamine zinc insulin is not the rule, however. He cites a case in which it failed. Nevertheless, its efficacy in some insulin resistant cases proves that this resistance is only relative.

Intermittent Claudication.—Kisch applies the symptomatologic term of intermittent claudication to disease processes which consist in chronic obliterating processes in the arteries of the leg, without paying attention to the clinical differentiation between arteriosclerosis obliterans and thrombo-angiitis obliterans. On the basis of fifty-three cases of intermittent claudication, he demonstrates the value of his simple work test in estimating the blood perfusion of the impaired vascular region. In this test intermittent claudication is induced by a standard exertion, an exercise which is repeated at the rate of thirty times a minute and consists of a maximal bending and a maximal extension at the ankle, knee and hip joints while the patient is in the horizontal position. The number of times the standard exertion has to be repeated indicates the status of the compensatory circulation on the part of the collateral vessels in the impaired muscular region. An increase in the number of exertions necessary to elicit an attack is an indication of improvement; a reduction, however, is a sign of exacerbation. The author cites three cases of intermittent claudication in which he resorted to the sublingual administration of 3 drops of 1 per cent alcoholic solution of glyceryl trinitrate. The work test revealed that the treatment produced an improvement in two of the cases, but not in the third. Other vasodilating drugs employed by the author were theophylline with ethylenediamine, caffeine and alcohol, the latter in the form of brandy or whisky. Influences likely to cause further impairment, such as pressure, cold, heat and misuse of tobacco, were avoided as much as possible. Moreover, care was taken that adequate amounts of water were taken and that elimination was regular. The combination of these measures together with the aforementioned vasodilating medicaments produced a considerable improvement in 45.2 per cent and a moderate one in 30.2 per cent of the cases. In the remaining cases, however, there was no betterment.

Polska Gazeta Lekarska, Lwów

17: 249-268 (March 27) 1938

*Changes in Chronaxia of Vestibule of Internal Ear of Rabbit Under Influence of Caloric Action. T. Wasowski and J. Hurynowiczówna.—p. 249.

Septicemia Originating from the Ear. W. Jankowski.—p. 251.

Treatment of Septic States with "Causyth." E. Tadlewski.—p. 255.

Remarks on Therapy of Diabetes with Protamine Zinc Insulin. A. Landau and B. Waksman.—p. 258.

Changes in Chronaxia of Vestibule of Internal Ear.

Wasowski and Hurynowiczówna report their experiments on twenty-seven rabbits accustomed to chronaximetric research of the vestibule of the ear. They made 186 observations with Bárány's method. They arrived at the following conclusions: Irritation of the labyrinth of the ear with cold and warm water causes a clearcut increase in the excitability of the vestibules, expressed by a decrease in the chronaxia. The increase in excitability after the action of cold water is most clearly marked on nystagmus (32.8 per cent of decrease in chronaxia), a little less on the deviation of the head (31 per cent) and still less on the deviation of the eye (20.46 per cent). Irrigation with hot water caused a great increase in deviation of the eye (chronaxia decreasing to 49.48 per cent), lessened the deviation of the head (decrease in chronaxia by 29.99 per cent) and showed least in nystagmus (decrease to 12.42 per cent). The character of the modification of the excitability in the vestibules after the action of cold water is similar to the changes artificially caused in anemia.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

82: 1061-1152 (March 5) 1938. Partial Index

*Several Cases of Scurvy, Particularly the Cutaneous Manifestations. L. J. Renders.—p. 1069.

*Vitamin B₁ Metabolism and Pregnancy. H. G. K. Westenbrink and J. Goudsmit.—p. 1076.

Blood Pressure, Pulse and Respiration Before and After Metrazol Shock. B. Stokvis.—p. 1084.

Irradiation with Roentgen and Radium Rays in Infectious Processes. D. Den Hoed.—p. 1093.

Experiences with Calcium-Bromide Preparation in Treatment of Epilepsy. A. Q. Van Braam Houckgeest.—p. 1096.

Cutaneous Manifestations of Scurvy.—Renders reviews the literature on the cutaneous manifestations in scurvy. Among others he mentions Strümpell's observation of the dry and exfoliative character of the skin during the latent stage of scurvy, the so-called keratosis suprafollicularis described by Aschoff and Koch, the papulokeratotic scorbutic dermatitis of Nicolau, the scorbutic pemphigus of Litton, the scleroderma-like disorder of scorbutic patients described by Morawitz and Pfeiffer and so on. Discussing the "keratosis suprafollicularis," he points out that Morawitz regards this disorder as the result of a nonspecific nutritional disturbance and that Gottron likewise is of the opinion that the disorder has no connection with scurvy. After mentioning the changes on the mucous membranes the author describes the clinical histories of six patients with scurvy. He gained the impression that keratosis suprafollicularis has no value for the diagnosis of incipient scurvy. In one of the patients he observed a scleroderma-like change on the legs, as had been observed by Morawitz and Pfeiffer in patients with scurvy.

Vitamin B₁ Metabolism and Pregnancy.—Westenbrink and Goudsmit discuss their observations on the vitamin B₁ metabolism in pregnant women. They found that nonpregnant women from the poor population of Amsterdam excreted less vitamin B₁ in their urine than did nonpregnant women who received a rather generous diet. It was observed that pregnancy exerted a noticeable influence on the excretion of vitamin B₁. With as well as without additional administration of vitamin B₁, pregnant women excreted on the average considerably less vitamin B₁ than did the nonpregnant women who might be supposed to be living on about the same diet. With only a few exceptions, the pregnant women were far from saturated with vitamin B₁. Since deficiency in vitamin B₁ may be accompanied by changes in the tongue, gastrointestinal disturbances, paresthesias, fatigue, edemas, changes in the blood and so on, such symptoms were sought among the twenty pregnant women from among the poor classes of Amsterdam. There was one group

entirely free from these symptoms or with only one slight complaint and another group which had several of these symptoms. In the first group the vitamin B₁ excretion was greater than in the second group; the food intake likewise was more adequate in the first than in the second group. These investigations demonstrate the usefulness of the authors' thiochrome method for the detection of vitamin B₁ deficiencies.

Svenska Läkaresällskapets Handlingar, Stockholm

63: 139-320 (No. 3) 1938

*Diagnosis of Intestinal Tuberculosis as Complication of Pulmonary Tuberculosis: Roentgenologic and Clinical Study. F. Tisell.—p. 139.

Intestinal Tuberculosis.—Tisell reports 178 cases of pulmonary tuberculosis with and without intestinal tuberculosis in which in most instances there was cavitation with bacilli in the sputum. Intestinal tuberculosis was demonstrated after death in fifty-four of sixty-one cases (88.5 per cent); in all but one there were changes in the ileocecal region. Anatomopathologic examination of the intestine after formol fixation showed prominent formation of folds in the mucous membrane. This formation is believed to act as a preventive mechanism. In cases in which there was extensive defect of the mucous membrane and greatly affected muscularis there were no folds; the wall was rigid and often infiltrated with connective tissue and the lumen often narrowed. In these cases the roentgenogram showed the ulcerations as small, closely situated undulant contour defects. Otherwise the x-ray appearance was dominated by the formation of folds in the mucous membrane, the ulcerations being to a large extent hidden by the folds. When the formation of folds was marked, the lumen was almost closed (Stierlin's symptom). Single small superficial ulcerations in the cecum could not be demonstrated roentgenologically. The author says that roentgen examination affords the best aid in the demonstration of ileocecal tuberculosis; roentgen demonstration of changes in the small intestine is less reliable. Localization of roentgenologic changes in the ileocecal region and simultaneous pulmonary tuberculosis support the diagnosis of intestinal ulcerations. Rigidity of the wall and the presence of the contour defects constitute the best evidence. Intestinal tuberculosis was diagnosed as roentgenologically probable in forty-eight of fifty-four cases in which necropsy revealed ulcerations in the intestine. In no case in which the intestine was normal after death had intestinal tuberculosis been the probable roentgen diagnosis. Symptoms of stenosis were observed in twenty-four of forty-seven cases in which there were ulcerations in the small intestine (51 per cent). The roentgenogram was positive in forty of forty-eight cases in which there was ulceration in the cecum (83.3 per cent). Single ulcerations in the terminal ileum could also give positive roentgen results. Diagnosis based only on the clinical picture was often unreliable. In 40 per cent of the cases in which there were roentgenologic changes, colicky pain and diarrhea were lacking. When either of these symptoms is absent, certain clinical diagnosis is impossible; roentgen examination allows probable diagnosis before their appearance. Constipation is a fairly early sign in intestinal tuberculosis. Marked tenderness to pressure in the abdomen and palpable tenderness in the right iliac fossa make the diagnosis probable, especially if accompanied by pain and loose stools. As deductions from the temperature can be made only when active pulmonary tuberculosis is excluded, this factor is of limited diagnostic importance. The increased sedimentation in intestinal tuberculosis is also of restricted value, as in these cases the pulmonary tuberculosis is usually progressive. Tubercle bacilli in the feces afford no proof of intestinal disturbance. Tisell is inclined to connect the origin of intestinal tuberculosis with diminished local or general immunity to infection. In most cases of demonstrable intestinal tuberculosis the pulmonary tuberculosis was extensive. In one third of all roentgenologically positive cases the interval between the onset of the pulmonary tuberculosis and of the intestinal tuberculosis was less than half a year. After an observation period of two and a half years, 80 per cent of all patients with roentgenologically positive intestinal tuberculosis were dead; the outcome is ascribed to the grave nature of the pulmonary disorder.

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PREMENSTRUAL TENSION

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PHILADELPHIA

Premenstrual tension is the term applied by Frank¹ to a relatively uncommon train of symptoms which occurs cyclically during the premenstruum in certain women of child-bearing age. As current literature is devoid of reports on this subject, its actual incidence cannot be estimated. The fact, however, that my associates and I have encountered the condition in fourteen women during the past three years suggests that it may be more frequent than is now suspected. The opportunity to study and treat ten of the group has led to a plan of management of premenstrual tension which seems to yield excellent therapeutic results and deserves a wider application. In pursuance of the latter thought, this report has been written.

SYMPTOMS

The unpleasant symptoms which 40 per cent of normal women suffer, in varying degrees, before the onset of menstruation are well known. Minor menstrual molimina may be manifest as fatigue, irritability, lack of concentration, backache and a vague sensation of pelvic discomfort. When the latter assumes the major proportions of a disabling pain, it is properly termed dysmenorrhea. I am not concerned herein with the problem of dysmenorrhea but rather with the pathologic manifestations of some of the normal menstrual complaints, manifestations sufficiently intense and delineated to deserve recognition as a morbid entity. Dysmenorrhea may or may not accompany the syndrome.

When well marked, premenstrual tension is readily recognized. It occurs in women between the ages of 20 and 40 years and is characterized by a cyclic alteration of personality. This alteration appears abruptly from ten to fourteen days prior to the expected menstruation and terminates dramatically with the onset of the flow. The monotonous periodicity of the syndrome and its precursive relationship to the menses are striking phenomena. The illness regularly begins as a dire and foreboding sensation of indescribable tension. The patient often inadequately describes this sensation by saying that she "would like to jump out of her skin," and her feeling is manifest to observers by her unusual behavior. When the tension periodically reaches its maximum height, the manic activity of the patient beggars description. There are marked

physical unrest and constant irritability. The illness may mimic an oncoming mental disease when the more exhausting episodes of motor activity are followed by brief periods of depression and hebetude. The forbearance of the patient's family is taxed beyond endurance by her unnatural and extreme annoyance with trifles. Unreasonable emotional outbursts and causeless crying spells, similar to those which characterize the menopausal syndrome, are frequent. Persistent insomnia, vertigo, painful turgidity of the breasts and constant headache are frequent accompaniments of the syndrome. Nymphomania, when present, is an arresting symptom and commands the deepest sympathy.

The curious phenomenon of premenstrual ulcerative stomatitis, attributed to defective luteinization,² may be one of the manifestations of premenstrual tension. It was the major complaint of one of the patients in the present series.

As with any clinical entity, not all the symptoms may be present in a single patient. The following case history, that of a patient selected from a group of fourteen similar patients (table 1), exemplifies the periodic frenzy of premenstrual tension and suggests an effective treatment.

REPORT OF CASE

M. T. C., a white woman, aged 34, the twice-divorced sister of a physician, was first seen May 7, 1935, with severe premenstrual symptoms. Her past medical history included an appendectomy, two induced abortions, one full term pregnancy and a vaginal plastic operation. Her menstrual history was normal, with thirty day cycles since the age of 13.

Her present illness was of seven years' duration and entirely cyclic in character, existing only during the premenstruum and increasing in intensity with the passage of years. During the major portion of the month the patient was a quiet, industrious, mild mannered woman, but exactly ten days prior to each menstruation she changed to an irritable, tensely restless, irascibly shrewish creature with headache, insomnia and nymphomania. The last symptom was outstanding because the greatly increased libido could not be stifled and the patient, despite frequent coitus, was forced to masturbate from fifteen to twenty times daily. This alteration of personality terminated abruptly at the onset of menstruation, only to reappear in twenty days. It was difficult for one who had observed the patient during several cycles to reconcile her dual personality.

General physical examination revealed no abnormalities, and the pelvic organs were in exceptionally good condition. Her height, weight and blood pressure and the results of serologic tests, urinalysis and a complete blood count were within normal limits. Single determinations of the estrogen content of both the blood and the urine during the height of the tension showed no deviation from the normal.

During the past seven years the patient's treatment had included physical therapy, sedatives, psychotherapy and estrogens. The last named, administered hypodermically in two

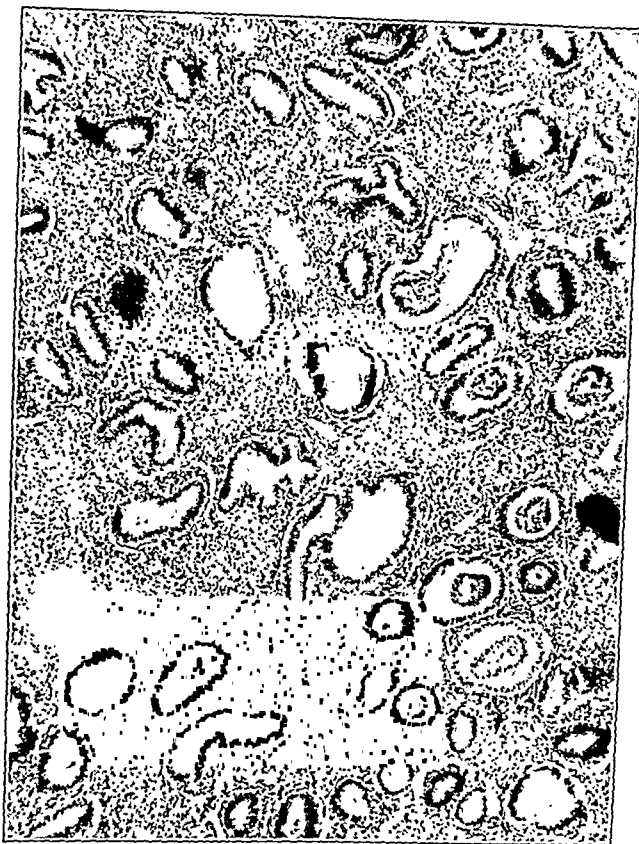
From the Department of Gynecology, Mount Sinai Hospital.
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2. Ziserman, A. J.: Ulcerative Vulvitis and Stomatitis of Endocrine Origin, *J. A. M. A.* 104: 826 (March 9) 1935.

courses, had definitely aggravated the symptoms. Bearing this fact in mind and ascribing the syndrome to defective luteinization, I gave the patient intramuscularly 1 international unit of corpus luteum principle, progesterone, daily from the eighteenth to the thirtieth day of the menstrual cycle for three successive months. During this period the patient remained entirely symptom free. However, a relapse occurred during the succeeding month, when no treatment was given. Immediately thereafter, with the hope of permanently rectifying the probable gonadal dysfunction, low doses of radiation to the pituitary gland and the ovaries were administered in three weekly exposures of 50 roentgens each. Since this treatment of two years ago, the patient has been free from the premenstrual tension and has continued to menstruate regularly.

ETIOLOGY

Fifty years ago Jacobi³ expounded the "menstrual wave" theory and ascribed the menstrual molimina to a cyclic ebb and flow of somatic functions. However,



Endometrial specimen obtained on the first day of menstruation from a regularly menstruating woman, aged 34, with premenstrual tension. Note the total absence of secretory (progesterone) changes. Slightly reduced from a photomicrograph with a magnification of 100 diameters.

not until 1931, when Frank¹ reported fifteen cases of premenstrual tension, did a seemingly plausible explanation of the cause exist. Frank determined the levels of estrogen in the blood and the urine of his patients and, finding a high renal threshold for the substance, hypothesized a hormonal pathogenesis for premenstrual tension in certain "labile" women. Such women, according to Frank, do not excrete estrogen in a normal manner. During the premenstruum, the concentration of estrogen in the blood rises and affects the sympathetic nervous system to the extent of the symptoms produced.

In the present series, only four of seven women whose blood and urine were assayed premenstrually

for estrogen exhibited a high renal threshold. The fact that the renal threshold for estrogen is not uniformly elevated bespeaks another explanation for the syndrome. It is suggested that premenstrual tension is caused, not by an excess of circulating estrogen, but rather by the presence of unantagonized estrogen. This implies that the primary cause of premenstrual tension is deficient ovarian luteinization, with a decreased production of progesterone. The fact that the symptoms arise during the period of corpus luteum activity further strengthens this supposition. Additional evidence may be adduced from the endometrial studies of four women in the present series. Three of the four patients, curetted just prior to or on the first day of a menstrual flow, showed the phenomenon of pseudomenstruation, cyclic uterine bleeding from an endometrium lacking the secretory influence of the corpus luteum hormone, progesterone. Two of these three women were found to be bleeding from an interval (proliferative) and one from a hyperplastic (exaggeratingly proliferative) endometrium. As pseudomenstruation is caused by failure of ovulation with subsequent absence of luteinization or by quantitative disproportion in the production of the ovarian hormones, estrogen and progesterone,⁴ its frequent occurrence in women with premenstrual tension supports the hypothesis of an aberration in the luteinizing process. In the light of our present knowledge, such an abnormality may be caused by deficient production of the anterior hypophysial luteinizing factor or by a refractory state of the ovaries. In either case the immediate result would be a lack of the corpus luteum hormone, progesterone. It may be possible in the near future to detect such a deficiency by employing the recently introduced technic of Venning⁵ for the assay of urinary pregnandiol, a degradation product of progesterone.

On the other hand, if the pathogenesis of premenstrual tension is as herein advanced, namely, a cyclic disturbance of normal luteinization, with deficient production of progesterone, why is it not more frequently encountered in women with pseudomenstruation? This and other questions besiege the validity of the hypothesis. Although it may not yet be proved, the theory does provide a rational mode of therapy for premenstrual tension.

TREATMENT

The treatment of premenstrual tension does not, in the absence of a proved etiology, rest on a solid foundation. Frank¹ employed nonspecific eliminative measures or roentgen castration, depending on the severity of the symptoms. Theoretically, assuming defective luteinization to be the cause of the disorder, the administration of the pituitary-like gonadotropin (luteinizing factor) should correct the condition promptly. Practically, however, the currently available doses of luteinizing substances, obtained either from extracts of the anterior hypophysis or from pregnancy urine, do not uniformly effect luteinization in human ovaries. Gonadotropic hormone therapy may become clinically effective when large doses, such as 25,000 rat units,⁶ are employed.

In view of the probable cause of premenstrual tension, namely, defective luteinization, with progesterone

3. Jacobi, M. P.: *The Question of Rest for Women During Menstruation*, New York, G. P. Putnam's Sons, 1877.

4. Mazer, Charles; Israel, S. L., and Kacher, Leon: *Pseudomenstruation in the Human Female*, Surg., Gynec. & Obst. 65: 30 (July) 1937.

5. Venning, E. H.: *Gravimetric Method for the Determination of Sodium Pregnanediol Glucuronide (An Excretion Product of Progesterone)*, J. Biol. Chem. 119: 473 (July) 1937.

6. Ross, R. A.: *Observations Pertinent to Gonadotropic Therapy in Gynecology*, Am. J. Obst. & Gynec. 34: 780 (Nov.) 1937.

perestrogenemia, administration principle, progestin, seems plausible to correct an actual deficiency by may modify an existing excess of its elimination.⁷ Moreover, as the patients in this series, such may eventually result in a per-

ients who submitted to treatment onal unit of progesterone⁸ intravenous other day during the second menstrual cycle for from two to three the seven patients were entirely the remaining two noted considering the period of treatment. syndrome reappeared, however, withdrawal of treatment. The despite the lack of an adequate from premenstrual tension for the courses of progesterone.

Permanent results, we subsequently irradiation of the pituitary gland of the progesterone-treated patients patients who had received no previous roentgen treatments were administered who followed the technic outlined includes three treatments of from is at weekly intervals to both the pituitary fields. In a patient of average factors for each treatment are 127 amperes, 14 inch distance, 5 mm. for three to five minutes (Edeiken). Patients so treated have remained free of tension during observation periods and a half to two and a half years. Two patients were also symptom free

of the Leading Symptoms of Premenstrual Tension in Fourteen Patients

Symptoms	Number of Patients
Tense irritability.....	13
Motor activity (restlessness).....	10
Crying spells.....	8
Headache.....	7
Vertigo.....	5
Insomnia.....	5
Painful turgidity of breasts.....	4
Nymphomania.....	3
Associated dysmenorrhea.....	2
Ulcerative stomatitis.....	1

after the roentgen therapy, but they suffered recurrences of the syndrome after six months and two years, respectively. Both patients received second courses of low dose irradiation and have now been well for more than a year. The periodicity of the menstrual cycle was undisturbed in all the women treated by roentgen rays.

The mechanism by which low dose irradiation corrects functional alterations of the pituitary gland and ovaries is a moot question, and the rationale for its use is purely empirical. However, the safety and value of radiation when properly administered have been adequately demonstrated in the reports of Rubin,¹⁰

Drips,¹¹ Mazer and Spitz,¹² Kaplan¹³ and others. Despite the fact that its greatest field of usefulness is in the treatment of certain types of menstrual irregularities, low dose irradiation of the pituitary gland and the ovaries may be applicable in the treatment of regularly menstruating women with functional aberrations of the gonads. It is of course an obvious corollary that the radiation must be administered in controlled doses by a competent radiologist.

One of the ten women who submitted to treatment (table 2) was markedly underweight and for eight

TABLE 2.—Effective Therapeutic Agents Administered to Ten Patients with Premenstrual Tension

Therapeutic Agent	Number of Patients
Progestin.....	3
Progestin and low dosage irradiation.....	4
Low dosage irradiation.....	2
Insulin.....	1

weeks was given 8 units of insulin twice daily plus a diet rich in carbohydrate. She gained 17 (7.7 Kg.) pounds, and the premenstrual tension disappeared (follow-up, two years). This observation is interesting in view of the effectiveness of insulin therapy in selected instances of pseudomenstruation.⁴

SUMMARY

The syndrome of premenstrual tension in fourteen women was ascribed to defective luteinization, with subsequent progestin deficiency or relative hyperestro-genemia.

As the harassing symptoms arise during the height of supposed corpus luteum activity and are aggravated by estrogen therapy, substitutive treatment with progestin seemed plausible. Low dose irradiation of the pituitary gland and ovaries was employed in the hope of permanently correcting the probable gonadal defect.

The administration of progesterone (crystalline corpus luteum principle) cured one and temporarily relieved six patients with premenstrual tension. Four of the six and two additional patients were subsequently cured by low dose irradiation to the pituitary gland and the ovaries. One malnourished patient was benefited by a gain of weight, aided by insulin therapy.

2116 Spruce Street.

11. Drips, Della G.: Treatment of Functional Menstrual Irregularities of Young Women, *J. Iowa M. Soc.* 24:1 (Jan.) 1934.

12. Mazer, Charles, and Spitz, Louis, Jr.: The Therapeutic Value of Low-Dose Irradiation of the Pituitary Gland and Ovaries in Functional Menstrual Disorders, *Am. J. Obst. & Gynec.* 30:214 (Aug.) 1935.

13. Kaplan, I. I.: A Study of the End Results of the Treatment of Amenorrhea and Sterility by Radiation of 128 Married Women Over a Period of Twelve Years, *Am. J. Obst. & Gynec.* 34:420 (Sept.) 1937.

7. Smith, G. van S., and Smith, O. W.: The Excretion of Estrin by Women, *Am. J. Physiol.* 100:553 (May) 1932.

8. Proluton (Schering Corporation) was employed. In bio-assay, the international unit of this crystalline substance is equal to a Corner rabbit unit of progestin.

9. Edeiken, L.: Small Doses of X-Ray for Amenorrhea and Sterility, *Am. J. Obst. & Gynec.* 25:511 (April) 1933.

10. Rubin, I. C.: Sterility Associated with Habitual Amenorrhea Relieved by X-Ray Therapy, *Am. J. Obst. & Gynec.* 12:76 (July) 1926.

The Father of American Psychiatry.—In that year Dr. Benjamin Rush joined the staff of physicians at Pennsylvania Hospital, beginning a thirty year period of service that was fraught with great significance to the mentally ill in America. He was the first American teacher to institute a comprehensive course of study in mental disease; he was the first American physician to attempt an original systematization of the subject. The theoretic structure that he erected was decidedly unsteady, as we shall see, but it marked a real beginning, and an honest one. He wrote the first general treatise on psychiatry in America, and it is no mean tribute to his genius that it remained the only American work of its kind for seventy years after publication. He fully earned the title by which he was known to later generations—"the Father of American Psychiatry."—Deutsch, Albert: *The Mentally Ill in America*, New York, Doubleday, Doran & Co., Inc., 1937, p. 72.

PRESSURE ON THE BRACHIAL PLEXUS CAUSING SIMULATION OF CORONARY DISEASE

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A series of patients has been observed in which the pressure of a cervical rib or the scalenus anticus muscle on the brachial plexus has been the cause of pain simulating angina pectoris. It is obvious that these diagnoses differ significantly in prognostic and therapeutic implications. The delay experienced by some of these patients before the correct diagnosis was achieved gives me ground for the belief that some discussion of the subject may prove timely.

Pain due to pressure on the brachial plexus is given but scant attention in nonsurgical literature. The occurrence of precordial pain and the simulation of angina pectoris or coronary thrombosis is rarely mentioned.

GENERAL DESCRIPTION

Fischel of Prague is said to have found cervical ribs in 1 per cent of all autopsies.¹ Adson and Coffey² state that 55 per cent of the persons in whom they found cervical ribs to be present had no symptoms. It is estimated that perhaps 10 per cent of persons with this condition have symptoms.

The cervical rib may be attached to any cervical vertebra from the second to the seventh. The costal syndrome may be present when the costal element of the seventh cervical vertebra is merely exaggerated.³ Sometimes the abnormal structure is a fibrous cord which acts like a cervical rib but cannot be visualized on the roentgenogram.¹ In fact, cases are met in which the syndrome is present in the absence of a cervical rib;⁴ an abnormality in the relation of the first rib and the brachial plexus is the cause.

The syndrome has been explained⁵ as due to a friction neuritis; the nerves are made taut across the sharp edge of the rib as the result of various unfavorable conditions in the relations of the nerves to the bony structures. More recently attention⁶ has been directed to the effect of the scalenus anticus muscle causing pressure on the subclavian artery or brachial plexus, or both. This muscle (fig. 1) extends between the transverse processes of the third to the sixth cervical vertebra downward to the scalene tubercle of the first rib. The scalenus anticus may compress the artery or nerves against the cervical rib, if such is present, or it may abnormally elevate the first rib and so interfere with the artery and plexus. If the latter is irritated the scalenus anticus muscle, which receives its innervation from the brachial plexus, may be stimulated to a state of spasm. A "vicious cycle" may be said to exist. The important part played by the scalenus anticus muscle and the fact that it may cause symptoms identical with

pressure by a cervical rib, in cases in which there is no extra rib, is the justification for the term "scalene anticus syndrome."

The average age at which symptoms first appear is 30 years. This delay is explained⁷ as due to the high position of the shoulder girdle in youth, symptoms being less prone to develop when the shoulder girdle is higher. During childhood and adolescence there is progressive descent of the shoulder girdle, which does not attain its final position until adult life. In some persons a further droop may be acquired as a result of faulty posture.

Pain, paresthesia and anesthesia in the area supplied by the affected nerve are the usual symptoms. The pain is neuralgic in character: it may begin in the neck, spread downward along the arm to the hand and sometimes the reverse way to the head and side of the chest. Rotation of the head toward the affected side or a downward pull on the shoulder may increase the pain. Loss of or decrease in amplitude of the radial pulse and a bruit over the clavicle are other symptoms and signs that may be noted.

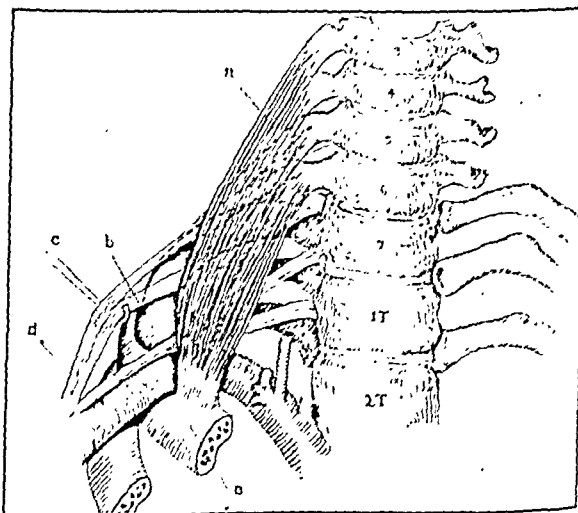


Fig. 1.—Compression of lower and middle cords of brachial plexus and of subclavian artery, between cervical rib and scalenus anticus muscle: a, scalenus anticus; b, cervical rib; c, upper and middle trunks of brachial plexus; d, lower cord of brachial plexus and subclavian artery; and e, first rib (Bickham's Operative Surgery).

A dilatation or actual aneurysm⁸ of the subclavian artery may be caused just beyond the point of constriction. Halstead⁶ found this condition in twenty-seven of 716 cases presenting cervical rib.

The simplest form of treatment⁷ is that of elevation of the shoulder upward and backward by a sling. Physical therapy is then used in an attempt to develop the trapezius and levator anguli scapulae muscles. If such measures prove unsuccessful and the symptoms warrant it, surgical treatment is advised. Operations are described⁸ for removal of the cervical rib or first rib, whichever is the cause of the pressure on the brachial plexus or subclavian arteries. A considerable number of patients have been relieved by section of the scalenus anticus muscle without removal of the bone (fig. 2).

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3. Jones, Robert, and Lovett, R. W.: *Orthopedic Surgery*, ed. 2, Baltimore, William Wood & Co., 1929, p. 585.
4. Carroll, cited in *Cervical Rib and Scalenus Anticus Syndrome*, editorial, J. A. M. A. 109: 878 (Sept. 11) 1937; Oschner, Alton; Gage, Mims, and DeBakey, Michael: *Scalenus Anticus (Naffziger) Syndrome*, *Am. J. Surg.* 28: 669 (June) 1935; Craig, W. McK., and Knepper, P. A.: *Cervical Rib and the Scalenus Anticus Syndrome*, *Ann. Surg.* 105: 556 (April) 1937. Graham, Singer and Ballon.¹ Jones and Lovett.³

5. Lindskog, G. E., and Howes, E. L.: *Cervical Rib Associated with Aneurysm of the Subclavian Artery*, *Ann. Surg.* 34: 310 (Feb.) 1937.
6. Halstead, W. S.: *An Experimental Study of Circumscribed Dilatation of an Artery Immediately Distal to a Partially Occluding Band, and Its Bearing on the Dilatation of the Subclavian Artery Observed in Certain Cases of Cervical Rib*, *J. Exper. Med.* 24: 271 (Sept.) 1916.
7. Jones and Lovett: *Orthopedic Surgery*, p. 589.
8. References 1-5.

REPORT OF CASES

CASE 1.—A housewife, aged 59, complained of pain in the left arm and over the precordia. An electrocardiogram was taken because of an irregularity in the cardiac rhythm. This was found to be due to sino-auricular block, and because such rhythm unusual in an adult it was suggested that a search be made for something, such as a tumor or a cervical rib, causing pressure on the nerves in the neck.

This suggestion was followed out by Dr. Henry J. Bakst, to whom I am indebted for the notes on this case. The original notes were inadequate because of language difficulty.

The patient had felt fairly well until about one month before, when she noted the onset of a severe burning pain in the left side of the chest anteriorly, the left axilla, the shoulder and the inner surface of the left upper arm. This pain was markedly increased when the patient lay on the left side. She also noted that a feeling of weakness and faintness followed when she was lying on the left side; there was no actual syncope. During the past month weakness of the left arm was experienced when she attempted to lift objects. Numbness and tingling of the fingers of the left hand had been noted during the past month. One week before admission slight swelling of the entire left arm with numbness appeared and persisted for two days. Dyspnea after ascending one flight of stairs had been present for several months; the pain in the chest and arm was accompanied by moderate dyspnea. Some vertigo had occurred during the past month.

The neck was not remarkable except for a hard, rounded swelling apparently extending from the cervical spine and palpated in both supraclavicular areas. Pressure on this mass in the left side of the neck caused pain locally and over the lower precordia and left upper arm.

The heart was normal except for occasional intermissions or gaps in the cardiac sounds.

There was some muscular weakness of the left arm but no abnormality of reflexes. The blood pressure was 164 systolic, 96 diastolic.

X-ray examination showed that the heart was normal in size and contour. There was moderate sclerosis of the thoracic aorta. Cervical ribs on the right and left were revealed. There was fibrosis of the right upper lobe of the lungs.

The remainder of the history and examination were irrelevant or normal.

The patient was seen by a surgeon and operation was advised but the patient declined surgical therapy.

CASE 2.—A man, aged 61, a "red cap" at a railroad station, complained of pain in the right shoulder and arm. He has noted a little shortness of breath during the last three weeks when carrying bags for customers. The pain in the right shoulder and arm is experienced at the same time. This pain is located on the top of the shoulder and down the inner aspect of the right arm to the elbow. The arm at these times feels a little weak. The patient tries to shield himself by going slowly and avoiding excessive weight on the right arm.

Physical examination was normal except for a hard mass in both supraclavicular fossae. These masses feel like bones and can be traced back to the lower cervical spine. The subclavian artery, especially on the right, is readily palpable and perhaps a little sclerosed.

Roentgen examination disclosed bilateral cervical ribs and the heart to be normal in size, contour and contractibility.

CASE 3.—A housewife, aged 39, has rheumatic heart disease, mitral stenosis and insufficiency, and aortic insufficiency. She was first informed of her cardiac impairment at the birth of her first child six years ago. She is being guided by the outpatient clinic and has relatively little in the way of symptoms or signs of cardiac insufficiency.

It was noted at a recent visit that she complained of a pain which she says "started in the right neck, went to the right axilla and settled under the right breast." This pain was made worse by lifting with the right arm; the pain might persist for an hour or more. She has noted this particular pain at times during the past six years.

Examination failed to detect a palpable cervical rib. Faulty posture and a low lying shoulder girdle were marked. The x-ray examination disclosed no cervical rib, but a very horizontal clavicle, low lying shoulder and prominent first rib.

The fact that three of these patients were observed within a period of three months offers reasonable ground for the belief that the syndrome is not rare. Doubtless recognition of the first case caused us to detect others more readily. Palpation of cervical ribs is not always easy, and in the case of a number of patients sent for roentgen examination it was found that what was palpated was merely a prominent transverse process of the seventh cervical vertebra. None

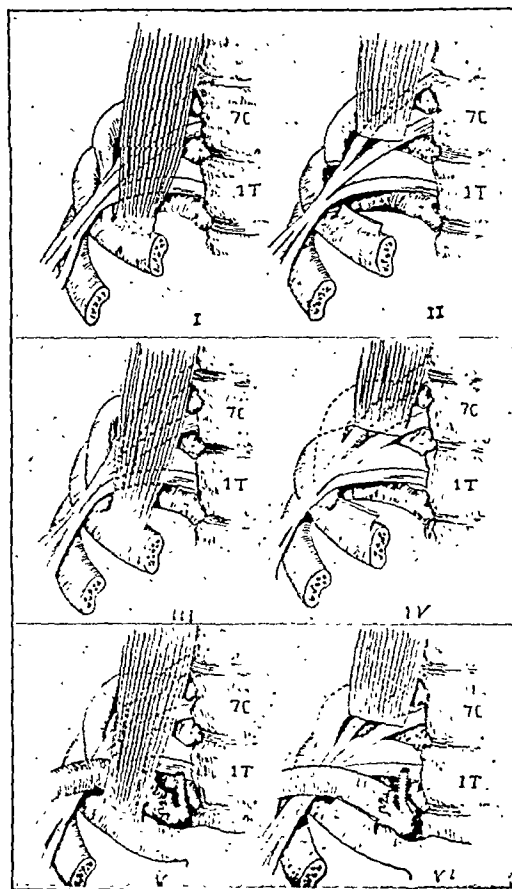


Fig. 2.—On the left, conditions causing compression; on the right, relief by surgical operation: I, Cervical rib and fibrous band to first thoracic rib; II, fully formed cervical rib; III, fully formed cervical rib; V, same as III except that compression of subclavian artery in addition to the lower cord of the brachial plexus is shown. For identification of structures see figure 1 (Bickham's Operative Surgery).

of the latter patients had symptoms warranting treatment for pressure on the cervical plexus.

Regarding the cases cited: The diagnosis of the first patient was obvious after one thought to palpate the neck for a bony mass which could account for the symptoms by pressure. Surgical treatment seemed clearly indicated but has not yet been accepted by the patient.

The second patient should cause little diagnostic confusion, although it is admitted that he was referred to the cardiac clinic, provided one considers that not all pains in the shoulder and arm are due to angina pectoris. It was found on further questioning that this man had been employed as a washroom attendant for years and noted the pain in the shoulder and arm

only after transfer to his present work, which involves a downward pull on his right arm. A change of occupation may well be the best treatment for this patient.

The third patient caused some doubt regarding the correct diagnosis, because of the absence of a cervical rib in the roentgenogram. However, consultation of a textbook³ made it apparent that orthopedists recognize the pressure syndrome in the absence of a cervical rib but with abnormal relations between the shoulder girdle and the first rib. What the writer palpated was probably the unduly prominent first rib. Fuller appreciation of the significance of the poor posture of this patient came after reading the description by Jones and Lovett.³

CASE 4.—A housewife, aged 36, complained of precordial pain and dyspnea. There was slight dyspnea on exertion. She would have slight precordial pain "when nervous." There was moderate palpitation. The patient would get spells of nervousness during which she had vertigo and difficulty in speaking. At these times she would feel weak all over.

She had been treated for heart disease because of shortness of breath for the past five months. During the past month she has had a dull precordial pain, which comes on usually when she is tired. There is sometimes pain in the left arm at the same time as the precordial ache. The pain is never sharp or severe and has a duration of about half an hour. The roentgenogram of the chest disclosed a cervical rib on the left side.

There was a bony prominence with a marked systolic pulsation over it in the left supraclavicular fossa. A rough systolic murmur could be heard over the bony mass. Pressure on the mass on the left side of the neck caused slight numbness in the left hand. There was slight dulling of sensation on the left side of the neck. The right supraclavicular fossa contained a similar but less prominent mass and without the murmur or symptoms on pressure.

The heart was normal except for a faint murmur over the apex impulse.

Roentgen examination showed the left cervical rib articulating with the first thoracic rib. The cervical and thoracic sections of the spine were normal.

The rib was removed by operation. The pain gradually disappeared during the subsequent two weeks. The patient noted that after the operation she was able to swallow better; prior to operation she had overlooked a moderate degree of dysphagia.

The fourth patient is selected from the hospital records; I am uncertain whether I myself examined her. Save that the precordial pain was, as the word implies, left sided, the pain syndrome was similar to the last of the cases cited. These last two patients appear to support each other; the former had definite heart disease plus the scalenus anticus syndrome, and the latter the scalenus anticus syndrome without heart disease. Her former physician found it difficult to accept the cure of his patient by excision of the cervical rib, but a cure has resulted. It should be noted that the pain subsided in the course of two weeks rather than immediately after operation; some degree of neuritis may well have been present.

An additional interesting case has been brought recently to my attention by Dr. Henry J. Bakst. The patient is a man, aged 29, who complained of precordial pain. The onset of the pain occurred six years ago; it has radiated to the left arm during the past year and is increasing in frequency and duration. The pain appears in association with exertion and is particularly severe after an attempt is made to walk with the shoulders back—the patient's usual posture is slightly stooped or round shouldered. Physical examination was normal save for left scoliosis of the spine, which straightens on bending, round shoulders, the left

shoulder higher than the right, and pronation of the feet. The patient was referred for orthopedic treatment—arches and exercises—and after two weeks of this has been completely relieved.

A noteworthy feature of these cases is that four of the five patients experienced pain in the anterior aspect of the chest or precordium, a fact that, as far as I am aware, has received little if any attention in the literature. The presence of precordial pain naturally caused an increased tendency to confuse this scalenus anticus syndrome with cardiac disease.

Since the foregoing was written an article⁴ has appeared which emphasizes the frequent association of a painful shoulder, due to neuritis of the brachial plexus with angina pectoris or coronary thrombosis. The shoulder condition may precede the cardiac disease or vice versa, and either appears to aggravate the other. The patient with brachial neuritis following a coronary infarction need not be kept in bed indefinitely; he may be ambulatory and his recovery accelerated by physical therapeutic measures, such as diathermy.

Although the pain complained of by these patients was in the same location and induced by exertion, angina pectoris was not really present. Only certain forms of exertion, such as a downward pull on the shoulder and turning of the head to one side, appear to provoke pain; other forms of exertion are not pain inducing. Often the pain does not cease promptly on cessation of the exertion; in fact, it may persist when the patient is at rest in bed and require differentiation from that associated with coronary infarction. The absence of the remainder of the picture of coronary thrombosis (shock symptoms, changes in the heart sounds, fever, leukocytosis, acceleration of the sedimentation rate, electrocardiographic changes and the like) and the undue persistence of the pain, in case a true brachial neuritis is present, should serve to exclude the cardiac diagnosis.

It is true, nevertheless, that the difference in the pain, as in the cases cited, may not be obvious unless the patient is questioned carefully and the lateral aspects of the neck are examined. Doubtless awareness of the fact that conditions in the neck may cause symptoms simulating either angina pectoris or coronary thrombosis is the most important factor in preventing an error in diagnosis. It is repeated that either brachial neuritis or coronary disease, or both, may be present in the same individual.

CONCLUSIONS

Pressure on the brachial plexus (by cervical ribs, the scalenus anticus muscle and tumors) may cause pain simulating either angina pectoris or coronary thrombosis.

Precordial pain may be so induced, and some relation to exertion may be manifest.

The presence of a cervical rib is not essential.

Pain caused by pressure on the cervical plexus is probably relatively common.

Consideration of both diagnoses—cardiac and that of the brachial plexus—should prevent a mistake in diagnosis.

Differentiation of two conditions may be of great importance to the patient.

750 Harrison Avenue.

9. Boas, E. P., and Levy, H.: Extracardiac Determinants of the Site and Radiation of Pain in Angina Pectoris with Special Reference to Shoulder Pain, *Am. Heart J.* 14: 540 (Nov.) 1937.

HEAD TRAUMA

REPORT OF 141 CASES

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The incidence of automobile accidents has increased to such an extent that public attention is being directed to the problem. The attendant bodily injuries make the treatment one of the few surgical problems of public welfare. Because of these injuries, increased attention on the part of both hospitals and physicians must be directed to their care. A large percentage of these cases present head injuries which are attended with a high mortality. My purpose in this paper is to analyze carefully a series of 141 consecutive cases of head trauma admitted to the Neurological Service at the Jewish Hospital, Philadelphia, from May 1933 to May 1936.

Among the many reports in the literature on the treatment of head injury, too few contain careful uniform statistics, and frequently there is no uniform method of analysis. This results in a great variation in accepted modes of treatment. For example, some hospital statistics show death rates as high as from 35 to 50 per cent in cases of "head injury," while others report rates as low as 10 per cent. Wortis and Kennedy¹ reported 1,000 cases of head trauma from the Bellevue Hospital with a mortality of 37.8 per cent. Swift² reported a large series of cases with a mortality of 25 per cent, while Fay's³ most recent report has only a 13.8 per cent death rate in 556 cases. That these results are obtained by surgeons particularly interested in the treatment of head injuries shows that there must be reasons why the figures vary so much. On careful analysis, the variation in statistics is found to be due to three factors; the method of analysis of cases, the hospital routine for receiving this type of patient and the method of treatment.

The series of 141 consecutive cases of head trauma here reported has been handled with these three premises in mind. The cases were classified with a rigid definition of head trauma; i. e., a period of unconsciousness of at least five minutes, a subarachnoid hemorrhage or a fractured skull. The hospital routine and organization were perfected. The nurses and interns were given lectures and instructions in the methods employed, and treatment in the wards was at all times made under personal supervision.

MORTALITY

There were fifteen deaths in this series, giving a mortality rate of 10.6 per cent. It is of particular interest to separate these cases into age groups. There were sixty patients under 20 years of age, sixty-six between 20 and 60 and fifteen over 60. The mortality rate was 5 per cent in the group under 20 years of age, 10.6 per cent in the second group, and 33.3 per cent in the group over 60 years of age. These results are in agreement with the observations of Swift,² who obtained the lowest mortality in children and adolescents.

Reviewing the data from the standpoint of the decade of life in which the injury occurred, the following deductions may be made: If a patient is under 20 years

of age he has approximately a twenty to one chance of recovery from head injury. If between the ages of 20 and 60, his chances of recovery are reduced to ten to one, whereas if he is over 60 his chances are only three to one. The figures just computed are not related to the severity of the injury. For instance, a number of children recovered who had severe crushing injuries with loss of cerebral tissue, while an apparently very mild cerebral injury in the elderly group was often a sufficient precipitating factor to cause death. Seven of the fifteen patients who died were over 60. Complications secondary to the injury were the chief factors causing death in the aged. For example, in one patient, 69 years of age, an acute cardiac decompensation developed, another, 66 years of age, went into delirium tremens, while in a third, 60 years of age, uremia developed after rather mild trauma.

Among the fifteen deaths, particular attention is directed to a group of four cases because of the similar but unusual clinical courses. Their respective ages varied, being 66, 35, 34 and 19 years. In these cases the trauma was apparently not severe. On admission the patients were more restless and irrational than unconscious. The pulse, blood pressure and respiratory rate were within normal limits. The physical and neurologic examinations were negative except for the irrational state. The spinal fluid was only slightly bloody, if at all, and the pressure of the fluid was consistently low. On first examination the injuries did not appear to be very severe and one expected the patient to regain full consciousness within a few hours. However, the stupor gradually deepened and the patients died within three to ten days. The blood pressure and pulse remained normal and well maintained until the terminal stage. None of the usual remedies were of benefit.

The cause of death in these cases is obscure. No postmortem examinations were possible. It is likely that death was due to widespread multiple areas of softening of the brain associated with petechiae and initial swelling of the smaller blood vessels, as described by Winkelman and Eckel.⁴ They showed that, in acute trauma, multiple areas of softening occurred and that the histologic picture was not different from that seen in the brains of patients suffering from severe infections and intoxications. It may be that the sudden lowering of blood pressure during shock starts a vicious cycle of cerebral edema that cannot be overcome.

OPERATIONS

Of the 141 patients, seven underwent operations. Of these, four recovered and three died. Three children with depressed fractures recovered completely following decompression and removal of bone fragments. One patient⁵ with a traumatic aneurysm of the internal carotid artery recovered after ligation of the common carotid artery. The three remaining patients were diagnosed as suffering from mass hemorrhage. In two of these a blood clot was found and removed, while in the other severe brain contusion was demonstrated at operation. All three patients died. The operative mortality was 42.8 per cent, the non-operative mortality 9.8 per cent.

COMMENT

From this series of cases and from studies of similar ones, I do not believe that there should be any distinc-

All cases in this study were under the personal supervision of Dr. Gotten. Dr. Temple Fay assigned these cases of head trauma at the Jewish Hospital to the care of Dr. Gotten, which privilege made this paper possible.

1. Wortis, B. S., and Kennedy, Foster: *Acute Head Injuries*, Surg., Gynec. & Obst. 55: 365-370 (Sept.) 1932.

2. Swift, G. W.: *Cerebral Injuries Due to External Trauma*, Surg., Gynec. & Obst. 62: 340-346 (Feb.) 1936.

3. Fay, Temple: *Treatment of Acute and Chronic Cerebral Trauma by Methods of Dehydration*, Ann. Surg. 101: 76-132 (Jan.) 1935.

4. Winkelman, N. W., and Eckel, J. L.: *Brain Trauma; Histopathology During Early Stages*, Arch. Neurol. & Psychiat. 31: 956-986 (May) 1934.

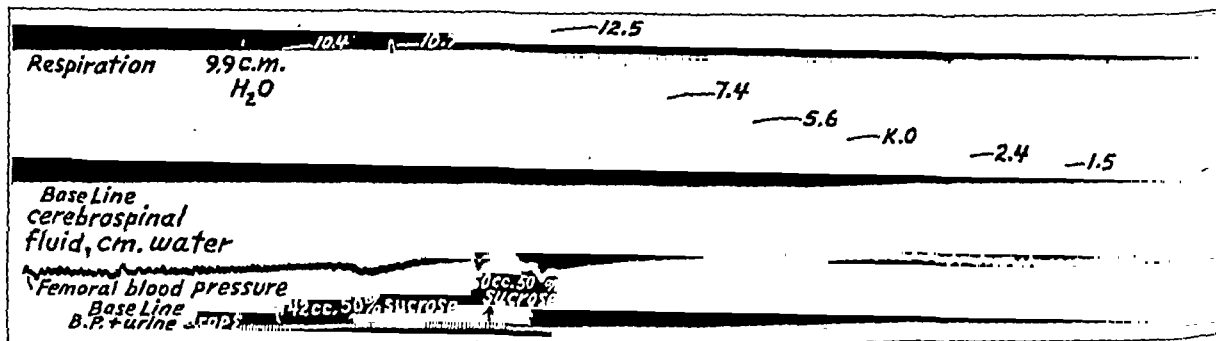
5. Operation in this case was done by Dr. Temple Fay.

tion between cases in which the skull was fractured and those in which blood was found in the cerebrospinal fluid. These conditions are only an index to the severity of injury the brain has received. It is to be noted that, in this series, eighteen of the patients with fractured skulls did not have blood in the spinal fluid, whereas seventeen of the patients with bloody spinal fluid had no fracture of the skull. This fact is emphasized to show that neither a fractured skull nor a subarachnoid hemorrhage alone can be used as the criterion of head injury. Either of these manifestations of brain trauma is sufficient to warrant hospital or bed care.

Many patients, after a severe blow to the head, have neither of these two manifestations but show symptoms of trauma to the central nervous system. This group is most often classified under the heading of "concussion."

The use of the word "concussion" as the diagnosis of brain injuries must be exercised with caution. With this diagnosis a sense of security is too quickly acquired by the physician and, as a result, serious cerebral complications may be overlooked. It has a definite descriptive meaning and should identify a definite condition. Concussion is a period of unconsciousness followed by

ternae, the ventricles or the subarachnoid space. Sometimes multiple hemorrhages may also occur in the pia mater spread to the surrounding cortex, but by far the most common pathologic changes in cases of head trauma are petechial hemorrhage with intense congestion and local edema. The petechiae are frequently limited to the subcortical white matter. This picture has been described by Cassasa,⁶ who found multiple petechial hemorrhages throughout the cortex after head injury without lacerations of the scalp, fracture of the skull or contusion of the cortex. Winkelman and Eckel have also reported microscopic changes in cases of head trauma. They found large and small hemorrhages in the brain with evidence of the onset of edema shortly after injury. Around the areas of petechial hemorrhages was complete destruction of the brain tissue. In one of their cases, hemorrhages were present throughout the entire brain, both in the cortex and in the subcortex, with attending generalized gliosis. In the smaller blood vessels in this case there was some thickening of the lining membrane cells with ischemic cell death. There seems to be sufficient evidence that even in cases of mild head trauma hemorrhage occurs with resulting areas of softening and gliosis of the entire brain.



Kymographic record showing effect on cerebrospinal fluid after intravenous injection of 50 per cent sucrose solution. From the physiology department, given dial and urethane anesthesia 0.5 Gm. per kilogram of body weight.

symptoms of injury to the nervous system. When treatment is based on this definition, attention in the series is focused on forty-nine cases diagnosed as concussion. Three of the forty-nine patients subsequently died. There was no evidence at the time of admission of a severe brain injury, but the mild injury was sufficient to precipitate complications that resulted in death. None of this group of patients had fractured skulls or bloody cerebrospinal fluid. However, their injuries were sufficient to cause marked manifestations of brain damage. It should be emphasized that among their symptoms were severe convulsions, hallucinations, mania, persistent headache, disorientation and increase in blood pressure. It is probable that all cases in which a period of unconsciousness exists should be classified under the one term, "brain contusion." Inability of the physician to find the clinical manifestations does not wash away the underlying pathologic condition.

PATHOLOGY

The gross pathologic changes of head trauma are familiar to all. They are mass hemorrhages (epidural and subdural), subarachnoid and petechial hemorrhages, lacerations of the brain and generalized edema. The pathologic changes from epidural and subdural hemorrhages produce their effect by compression of the brain.

Subarachnoid hemorrhages may be large or small. Tears in large vessels may bleed directly into the cis-

With the pathologic proof that ischemic cell death occurs in brain trauma, it may be surmised that in mild cases edema eventually becomes so severe that death ensues. In the group of four cases analyzed in the mortality report the clinical and pathologic observations were parallel. As was pointed out, in none of these cases did the initial trauma seem severe. The clinical course, however, was progressive until it terminated in death. There was no focal involvement of the brain, nor did the spinal fluid show evidence of severe injury. By deduction, one may conclude that a generalized cortical edema followed the injury and that ischemic cell death became too great for recovery.

From the pathologic changes just discussed, attention is again called to the large group of cases classified under the heading of concussion. These patients presented no evidence of fractured skull or bloody spinal fluid, though clinical signs of brain injury were evident. For example, focal and generalized convulsions, aphasia, paralysis, nystagmus, severe headache, slow pulse, increase in intracranial pressure and Cheyne-Stokes respirations occurred. Many of these patients had no initial period of unconsciousness but these symptoms developed subsequent to trauma. In three instances death ensued. The careless handling of patients with early evidence of mild trauma may result in death.

6. Cassasa, C. B.: Multiple Traumatic Cerebral Hemorrhages, *Proc. New York Path. Soc.* 24:101, 1924.

TREATMENT

Our experience previous to beginning this series had shown that better results could be gained by nonoperative treatment. Consequently, conservatism was the watchword in this series and is recommended with the following reservation: The only conditions requiring operation are subdural and epidural hemorrhages and those of compound or depressed fractures. The epidural and subdural hemorrhages comprise less than 3 per cent of the total number of cases; therefore the operative method of treatment is rarely indicated. Operation for the relief of intracranial pressure cannot be too highly condemned because anesthetic difficulties add only injury to an already traumatized brain. When these operations are performed for the relief of intracranial pressure, spontaneous rupture of the brain may occur from the removal of bone and incision of the dura. Recovery then becomes more difficult.

The recent conservative trend in the treatment of cerebral trauma, particularly as regards surgery, is familiar to all. Our results by conservative methods have coincided with those of Fay, Mock, Swift and others. These methods were given preference when it was noted that the chief underlying condition following a blow to the head was a rise in hydrostatic pressure

the first three or four days this amount was gradually increased if the physical condition improved. Limitation of fluids has its chief effect by reducing brain volume, but one must be careful to prevent dehydration of too severe degree. This is manifested by a rise in pulse rate and an elevation of temperature. Sufficient fluids should always be given to prevent this condition.

The other method of controlling intracranial pressure is by use of hypertonic solutions. Dextrose was used in most of our cases, but sucrose⁷ has recently been substituted and found to be more satisfactory. A number of experimental and clinical papers have previously pointed out the demerits of concentrated dextrose therapy. Following the injection of dextrose there was found to be a secondary rise in intracranial pressure (Sacks and Wassermann). Bullock, Kinney and Gregersen⁸ found that with sucrose this secondary rise did not occur. Their results were confirmed in experiments on dogs in the physiology department of Temple University. The illustrative kymographic record shows the prolonged lowering of intracranial pressure as well as the extraordinary stimulation of urinary output in one of these experiments. The amount of fluid excreted was far in excess of the total amount of administered fluids and there was no toxic

ent of Temple University Hospital. This chart represents one of a series of similar experiments with sucrose. A female dog weighing 7.5 Kg. was

with extravasation of fluid into the perivascular spaces. This resulted in stasis of cerebral circulation and led to anoxemia. Another factor in raising the intracranial pressure is the mechanical blocking of the cerebrospinal fluid system due to hemorrhage into this system. The combined results of the physiologic changes is congestion and edema of the brain. There is little doubt that edema of the brain was present in more than 50 per cent of our cases and free blood was found in the fluid of 65 per cent of them.

Our subsequent treatment of these cerebral injuries was individualized as much as possible. In each case the treatment given depended on the severity of the injury manifested by the focal or general neurologic condition. A spinal puncture was done as a routine to determine the pressure changes and the degree of hemorrhage. If the pressure was within the normal limits or only slightly elevated, no further punctures were performed. If the spinal fluid pressure was increased to an appreciable degree, fluid was removed until the pressure was brought to a normal level. Subsequent spinal punctures were performed until the normal balance could be maintained by limitation of fluids.

Moderate limitation of fluids was the routine, but the amount varied with the patient's general condition and the spinal fluid pressure. As a rule, between 900 and 1,200 cc. of total fluid was allowed daily. During

effect. Following these experiments, sucrose was administered in 50 per cent solution in cases of head trauma with very satisfactory results. Hypertonic solutions have their greatest value during the period of shock and acute edema, but care must be taken to prevent depletion of body fluids. After the acute period of trauma is over the patient is kept on moderate limitation of fluid for a period of months, depending on the severity of the injury and on the post-traumatic symptoms. Phenobarbital in divided doses is also given for a period of from one to two months. The use of a sedative and some limitation of fluids are necessary in the prevention of post-traumatic symptoms. This phase of the subject has been fully discussed by other authors (Fay).

The most important single factor in the treatment is nursing care, particularly in the receiving ward. Nearly all the patients in our series suffered from some degree of shock. Proper nursing through the shock period is essential for recovery from the immediate effects of trauma. On admission patients were sur-

7. Eli Lilly & Co. supplied the sucrose solution used in the experiments; Dr. Melvin Oppenheimer and Dr. Gotten carried them out. Since this work was done an article has appeared in the literature on the clinical use of sucrose in brain injuries (Hahn, E. V.; Ramsay, F. B., and Kohlstaedt, K. G.: Clinical Experience in the Use of Sucrose Instead of Dextrose in the Osmotic Therapy of Increased Intracranial Pressure of Acute Brain Injury, *J. A. M. A.* 108: 773-736 [March 6] 1937).

8. Bullock, L. T.; Kinney, R., and Gregersen, M. L.: The Use of Hypertonic Sucrose Solution to Reduce Cerebrospinal Fluid Pressure Without Secondary Rise, *Am. J. Physiol.* 109: 17 (July) 1934.

rounded with external heat in the form of warm blankets and hot water bottles. Hypertonic solutions were administered to restore blood pressure. No attempt was made to repair lacerations of the scalp at this time. Sterile wet dressings were applied and further attention to the wound was delayed until after recovery from shock. Mild sedatives in the form of soluble phenobarbital were given to combat restlessness. X-ray examinations and spinal punctures were at all times deferred until shock was past, because of the danger of exposing the patient's body.

SUMMARY

In a series of 141 consecutive cases of head trauma admitted to the Jewish Hospital, Philadelphia, from May 1933 to May 1936, all patients having a fractured skull, subarachnoid hemorrhages or a period of unconsciousness of more than five minutes are included. There were fifteen deaths, giving a mortality rate of 10.6 per cent. Seven of the patients who died were over 60 years of age. The mortality of patients over 60 years of age was approximately 30 per cent. The mortality of patients under 20 years of age was approximately 5 per cent. The clinical observations on four fatal cases were analyzed. These patients died from what was apparently an ischemic cell death. Only seven patients were operated on. Four recovered and three died. In every case operation was postponed until all other methods of therapy had been considered. Operations were performed only when a mass hemorrhage was suspected.

Particular attention is called to cases presenting on first examination evidence of very mild cerebral injuries. Subsequent examinations showed that mild trauma frequently brings on serious complications in both young and old patients. These complications are manifested by convulsions, transitory paralysis, aphasia, severe

TABLE 1.—Jewish Hospital—Head Injuries
(May 1933-May 1936)

Fracture of skull.....	37
Subarachnoid hemorrhage.....	18
Concussion.....	37
Total number of cases.....	49
Deaths.....	141
Mortality percentage.....	15
	10.4

TABLE 2.—Classification of Head Injury According to Age

Age.....	1-20	20-60	60 and over
Total number.....	60	66	15
Deaths.....	3	7	5
Mortality percentage.....	5%	10.6%	33.3%

vertigo, persistent headache and the like. The pathologic basis for these observations is probably multiple petechial hemorrhages throughout the entire brain.

Conservatism in treatment is important. The patient is given preliminary treatment for shock and then a thorough neurologic examination. Routine lumbar punctures are done only to relieve any increase in intracranial pressure. Hypertonic dextrose solution is not advocated. Clinical experiments are being carried out with sucrose solution for the reduction of intracranial pressure, as it does not cause a secondary rise in intracranial pressure.

CONCLUSIONS

1. The most important single feature in treatment is good nursing care, with particular reference to treatment in the receiving ward.

2. The age of the patient is the greatest factor favoring recovery from head injury. The younger the patient, the higher the percentage of recovery.

3. Complications occurring in what appears at first to be mild injury should receive particular attention.

4. Continued conservatism in treatment is strongly advocated, operation being avoided whenever possible. The reduction of intracranial pressure by conservative methods available in every hospital is recommended, such as limitation of fluids, magnesium sulfate and lumbar puncture.

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THE EXCEPTIONAL REQUIREMENT OF INSULIN AND SALT SOLUTION IN DIABETIC COMA

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Although the treatment of major emergencies such as profound diabetic coma cannot be standardized, it must be directed by consideration of fundamental principles. The first is that insulin must be given early enough and in sufficient doses to produce the desired effect, regardless of the number of units. The second is that intense dehydration with fall of blood pressure and consequent anuria must be combated by replacement with liquids containing electrolytes in sufficient quantity to restore blood volume and electrolyte balance. A sufficient dose of insulin may be as little as 30 units or it may be from 500 to 1,200 units. The essential thing is that it shall bring about a restoration of normal carbohydrate metabolism as indicated by a falling blood sugar and a rising carbon dioxide combining power of the blood plasma. Patients treated early in the course of coma will require smaller doses; patients treated after a long period of neglected treatment will require correspondingly larger doses. With regard to the administration of fluid, in general, most patients in diabetic coma will not require more than from 4,000 to 5,000 cc. of salt solution including the amount given intravenously and under the skin in addition to the small amount which can be given by mouth. However, there are exceptions which require an individualization of dosage and the use of such large quantities as would seem dangerous to physicians unfamiliar with these extraordinary cases. The following cases are reported to illustrate the use of 1,320 units of insulin in profound coma and the administration of 11,000 cc. of salt solution in the course of a few hours with successful results:

REPORT OF CASES

CASE 1.—A woman, aged 31, entered the Beth Israel Hospital April 22, 1937, in profound diabetic coma. For at least two months she had been losing weight and strength and had a great increase in appetite. No medical examination or urine test had been made since the age of 5 because of a devotion to a non-medical cult. For one month she had been in a rest home and for four days she had had no appetite. Two days previously she had been short of breath and she vomited the day before. On the morning of admission she was found unconscious. Catheterization in the hospital produced 30 ounces (900 cc.) of urine containing 4.2 per cent of sugar and 4 plus diacetic acid. The blood sugar was 1,194 mg., carbon dioxide combining power was 3 volumes per cent, nonprotein nitrogen was 55 mg. per

From the George F. Baker Clinic, New England Deaconess Hospital and Beth Israel Hospital.

hundred cubic centimeters. She was given 80 units of insulin. No more urine was secreted, so that the actual time of onset of anuria was uncertain. During the next two hours with anuria, the blood pressure steadily fell to 60 systolic, 38 diastolic, and at times during the next half hour she was pulseless. The rectal temperature was 94 F. The extremities were cold and mottled. The eyeballs were so soft that a reading with a tonometer could not be obtained. In the face of the anuria and the falling blood pressure, despite 4,000 cc. of fluid given subcutaneously, it was decided to administer saline solution constantly by means of an indwelling cannula tied into a vein in the leg. During the next eight hours she received 8,000 cc. of salt solution intravenously, in addition to the 4,000 cc. of salt solution given subcutaneously. The accompanying table summarizes the changes in the blood chemistry, the insulin dosage and the amount of fluid administered.

The plasma chloride value was 568 mg. per hundred cubic centimeters seven hours after the administration of salt solution was begun; the nonprotein nitrogen rose to 67 during the first few hours and returned to normal only after eight days. Incidentally, the white blood count was 28,500. The initial red blood count of 5,750,000 fell to 3,950,000, where it remained for two months. For nine hours while she was anuric and the extremities were cold, four nurses massaged the extremities and massaged the fluid given under the breasts to make sure of its absorption. Gastric lavage gave 250 cc. of thick, yellow, dark fluid. Evidence of pitting edema did not develop in spite of the administration of 12,000 cc. of liquid in eleven hours. It must be remembered that the patient was absolutely untreated, and for probably four months she had been breaking all the rules that would ordinarily be imposed on a diabetic patient and had been allowed to go as far in coma toward death as it is possible for any one to go and recover. We feel sure that the patient would have died had the usual routine amounts of liquid or much smaller doses of insulin been given.

Four months after discharge, she gave up treatment. Within three months mild coma again occurred with recovery. Yet this was so mild a case that 8 units of insulin a day kept the urine sugar free and blood sugar normal with good dietary control.

CASE 2.—A woman, aged 25, a kindergarten teacher, was seen by one of us (H. F. R.) through the courtesy of Dr. F. G. Brigham and Dr. Earl Lehnher on Dec. 9, 1937. The diabetes had begun in September 1927, and she had taken insulin since 1928. Protamine zinc insulin had been given her previous to admission; up to December 4 she was taking 50 units of protamine zinc insulin once a day and was in good condition. December 7 she felt as if she were getting a mild attack of grip; during the night, from 10 o'clock on, she vomited "every ten minutes." At first there was no pain, but the rest of the day she had severe pain in the back. The next morning, December 8, morphine was given for the relief of pain, dyspnea and restlessness. That afternoon she was found unconscious. On admission at 5 p. m. December 8, she had typical Kussmaul respiration and acetone breath and, while apparently unconscious, she could be roused by vigorous stimulation. The eyeballs were soft, the urine sugar was 2.8 per cent, and 3 plus reaction for diacetic acid was found. The blood sugar was 620 mg. per hundred cubic centimeters and the carbon dioxide combining power of the venous blood was 3 volumes per cent. She was immediately given 40 units of insulin and in the next seven hours received a total of 240 units of insulin. Nevertheless, the blood sugar rose to 870 mg. per hundred cubic centimeters, and it was evident that her condition was not improved, since the blood pressure had fallen from systolic 108 to 80 at 11:30 p. m., and the amount of urine obtainable at 9 p. m. was measured only in drops. In fact, at 11 o'clock no urine was obtained. By 3 a. m. December 9 she was pulseless. At this time, since she had been anuric for five hours, it was decided to increase the amount of fluid administered, and a cannula was therefore tied into a vein in the leg and constant infusion of physiologic solution of sodium chloride was begun. A gastric analysis on admission yielded nearly a quart of tarry, black fluid.

She received a total of 11,660 cc. of physiologic solution of sodium chloride, of which, 6,860 cc. was given by the intravenous route in a period of ten hours. The subcutaneous fluid previously given had contained dextrose. The total amount of

insulin was 850 units. In this instance, in spite of the administration of 240 units of insulin and 4,800 cc. of fluid, in which was included 3,500 cc. of 5 per cent dextrose solution, the patient became anuric and pulseless and the blood sugar rose to 1,000 mg. per hundred cubic centimeters. When, at this point, the use of insulin in doses of 100 units and of constant intravenous infusion of salt solution was begun, the blood sugar fell steadily to 230 mg. per hundred cubic centimeters at the end of thirteen hours, the secretion of urine returned and the blood pressure rose. The amount of blood and chloride lost from the stomach was not estimable except from the patient's description of the frequent vomiting and the tarry matter obtained from the stomach and the further fact that a rather marked anemia developed, so that the red cells six days later numbered 2,990,000 and the hemoglobin was 56 per cent. Under treatment with iron and liver extract the anemia has improved, so that on Jan. 12, 1938, the blood count was normal and the hemoglobin was 80 per cent.

The first plasma chloride four hours after admission was 557 mg. The next day the plasma chloride had risen to 682 mg. and this value had returned to 619 mg. December 11. Undoubtedly to some extent the anemia was due to a dilution effect, but it is true that no visible or palpable edema ever developed. The

Administration of Insulin, Saline and Dextrose Solution in Diabetic Coma with Recovery

Time, Hours After Admis- sion	Blood			Fluid (Physiologic Solution of Sodium Chloride)		
	Sugar, Mg.	Carbon Dioxide Combining Power, Vols. per Cent	Insulin, Units	Sub- pectoral, Cc.	Intra- venous, Cc.	Dextrose in Fluid, Gm.
Case 1						
0 - 3	1,194	3	280	2,000	.....	50
	1,000	7				
3 - 6	821	5	500	2,000	2,760	..
6 - 8	606	9	200	.....	3,500	..
8 - 12	506	11	...	.....	1,800	..
12 - 20	315	15	300	.....	.....	..
20 - 30	136	18	...	.....	1,800	45
30 - 36	326	17	40	.....	.....	..
Case 2						
0 - 6	620	3	200	3,500	.....	100
6 - 10	1,000	6	120	1,500	.....	75
10 - 14	760	11	350	.....	3,000	..
14 - 20	230	16	180	.....	3,860	55

nonprotein nitrogen of the blood had risen from 60 to 69 mg. per hundred cubic centimeters eight hours after admission but had returned to 38 mg. two days later. January 12 the blood sugar was 130 mg. per hundred cubic centimeters and the nonprotein nitrogen was 28 mg. Her weight on that day was 135 pounds (61 Kg.) as compared with 141 pounds (64 Kg.) on Dec. 4, 1937.

COMMENT

These cases illustrate the disadvantages of using dextrose solution during the early stages of coma when the patient's carbohydrate metabolism is so disordered that utilization of the dextrose is impossible. Thus, in each case the administration of dextrose led to the difficulty of deciding whether the high and rising blood sugar was due to increasing severity of the coma or to the administration of the dextrose. During severe and uncontrolled diabetic coma, dextrose is to be regarded as a poison. In such cases the use of dextrose solutions may be the deciding factor in producing the final stage of anuria. When, however, sufficient insulin has been given to bring about the control of carbohydrate metabolism, dextrose solution given either subcutaneously or by vein may be the safest and easiest way of administering food.

In the first case, a total of 8.2 Gm. of sodium bicarbonate was given in the salt solution at a period beginning six hours after hospital admission. It must be confessed that this was an extremely faint-hearted use of sodium bicarbonate in an amount which could not possibly have had any effect on the condition. Patient

2, when anuric, was given 60 cc. of 10 per cent salt solution just after the administration of constant intravenous infusion had been begun. Possibly this contributed to relief of the anuria.¹

The use of 1,280 units of insulin in case 1 between 11 a. m. one day and 4 a. m. the next day, a period of seventeen hours, to reduce the blood sugar from 1,194 mg. to 136 mg. per hundred cubic centimeters (value obtained twenty-seven hours after first dose) may seem an unnecessarily large amount. One may take for comparison other conditions in which large amounts of insulin have been used. In the case of a physician with hemochromatosis, 1,600 units of insulin a day was given regularly.² In such an instance there is a clear indication of the reason therefor. When the liver is so severely damaged as seriously to reduce the power of removing sugar from the blood in order to store glycogen, it is not strange that the amount of insulin required becomes high. Similarly, in acute hyperthyroidism complicating coma one deals with a disturbance affecting liver function, and in one such case 800 units of insulin was required. Although the average amount of insulin given in the first twenty-four hours of diabetic coma has tended to rise in the interim between 1923 and 1936, during the last eight years the average has varied between 200 and 252 units.³ However, in the 338 attacks of diabetic coma occurring in 275 patients at the New England Deaconess Hospital a dose of from 500 to 800 units of insulin in the first twenty-four hours has by no means been rare. In the first case here presented the fall of blood sugar was gradual, the urine became sugar free at the time the blood sugar reached 136 mg. and at no time did hypoglycemia develop. Indeed, a few hours later that same day the blood sugar on two different occasions was 218 and 326 mg. There is no justification for feeling, therefore, that the amount of insulin given was excessive or that it was lost in the urine, because it must be remembered that the patient was anuric during the first eight and one-half hours of treatment. Similarly, during the period when the greater part of 800 units was given, patient 2 was anuric and therefore no suspicion can be raised that so much insulin failed to be utilized because it was lost in the urine. Here also the fall in blood sugar, once a sufficient amount of insulin was given was steadily downward, until the value of 230 mg. was obtained twenty-three hours after admission. At this time the urine also became sugar free and a single specimen of urine obtained every hour thereafter was sugar free for twenty-four hours, and during this period it was possible to give the patient much needed food with the confidence that it would be metabolized. Since February 1929 in fifteen attacks of diabetic coma during the first twenty-four hours of treatment at the Deaconess Hospital from 510 to 1,020 units of insulin has been required. In this group occurred three deaths. An aged woman who received 1,020 units died of cerebral hemorrhage that had been present before admission; a young man died of acute hemorrhagic pancreatitis; a woman who received 780 units died with anuria seven hours after admission to the hospital, an attack which we would now treat by the methods here advocated.

Fluid and Electrolyte Requirements.—In only three of 338 attacks of diabetic coma have we thus far used

more than 8,000 cc. of fluid, including subcutaneous and intravenous, within twenty-four hours of admission. In retrospect it has seemed quite evident that we have lost patients in the past with circulatory collapse and anuria because of failure to give sufficient fluid and electrolyte quickly enough. Tremendous variations in the rapidity and severity of diabetic coma occur in different individuals with different types of diabetes. Fundamentally, diabetic coma is due to a lack of control of diabetes and a loss of the power to metabolize carbohydrate and fat normally. A breakdown of fat acids results in large quantities of ketone bodies. A certain portion of these bodies is excreted as free acid and other portions are neutralized and excreted. With excessive ketone production, neutralization of the acid is accomplished not merely by means of ammonia but by the withdrawal of fixed base, chiefly sodium. This is accomplished by a reduction in the base of the blood and a reduction of the total salt and the total electrolyte concentration in the body fluid. The fluid is excreted with dehydration, a reduction in the fluid volume of the body and a further loss of base. The end results are (1) hemoconcentration and dehydration; (2) loss of both base and chloride in the body; (3) reduction of the plasma carbon dioxide combining power; (4) the shift of the p_H of the blood toward the acid side. In diabetic coma of only a few hours or a few days' duration, with a patient whose diabetes is not fundamentally severe, the amount of insulin and the amount of fluid and base required may be moderate. As a rule with most of our patients from 4,000 to 5,000 cc. of salt solution has been ample, but the cases reported here show clearly that there are exceptions in which vastly more aggressive treatment is required.

Causes for Diabetic Coma of Unusual Severity.—In addition to the usual causes such as infection, breaking the diet and omission of insulin, one must stress delay in diagnosis and treatment as the chief factor in producing unusual severity and fatal termination of coma. These two cases illustrate two causes not often emphasized. One patient, with mild diabetes, was a practitioner of a cult and neglected symptoms until she was actually found unconscious. This was not a case of insulin resistance, but merely of neglected treatment. The other patient presents a more tragic failure: when she was in pain with serious acidosis, prior to being seen by any physician here mentioned, morphine was given, the worst possible medication for a patient in whom the diagnosis and the treatment are at all uncertain. Morphine and diabetes are sworn enemies under such circumstances.

Indications for Constant Intravenous Infusion of Saline Solution in Large Amounts and the Use of Insulin Above 500 Units.—In the future the following factors will again lead us to employ these aggressive methods of treatment:

1. Clinically, a history of prolonged acidosis and lack of diabetic control, unconsciousness for more than six hours and repeated vomiting.

2. On examination, soft eyeballs, dry, cold and mottled skin, a rectal temperature below 97 F., systolic blood pressure below 90 mm. of mercury, gastric dilatation with tarry contents and, finally, diminishing urinary secretions.

3. Laboratory indications of severe coma such as a carbon dioxide combining power of below 10 volume per cent and a blood sugar of over 700 mg.

81 Bay State Road.

1. Root, H. F.: Anuria Following Diabetic Coma Relieved by Hyper-tonic Salt Solution. *J. A. M. A.* 103: 482 (Aug. 18) 1934.

2. Root, H. F.: *New England J. Med.* 201: 201 (Aug. 1) 1929.

3. Joslin, E. P.: *Treatment of Diabetes Mellitus*, ed. 6, Philadelphia, Lea & Febiger, 1937, p. 351.

GENTIAN VIOLET AS A THERAPEUTIC AGENT

WITH NOTES ON A CASE OF GENTIAN VIOLET TATTOO

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New and Nonofficial Remedies, 1937,¹ gives the information that the medicinally interesting derivatives of triphenylmethane and its homologue tolyldiphenylmethane are those which result from the introduction of amino groups forming pararosaniline, $(\text{NH}_2\text{C}_6\text{H}_4)_3\text{COH}$, and rosaniline, $(\text{NH}_2\text{C}_6\text{H}_4)_2(\text{CH}_3\text{NH}_2\text{C}_6\text{H}_3)\text{COH}$.

On treating rosaniline with hydrochloric acid, the hydroxyl of the carbinol group is split off, permitting the formation of the quinoid group, thus forming a typical dye known as fuchsin, $\text{NH}_2\text{C}_6\text{H}_4\text{CH}_3\text{NH}_2\text{C}_6\text{H}_3\text{C}:\text{C}_6\text{H}_4:\text{NH}_2\text{Cl}$. The red color of pararosaniline chloride or fuchsin is changed to violet by the entrance of a methyl group in the amino groups, the intensity of the violet color increasing with an increasing number of methyl groups. Thus, there are the closely related gentian violet, crystal violet and methyl violet. Gentian violet is a mixture of pentamethylpararosaniline chloride and hexamethylpararosaniline chloride; by some it is defined as a mixture of methyl violet and crystal violet. . . . It seems likely that in therapeutics . . . the one most easily obtained in pure form (crystal violet) will be the one most used. . . . Gentian violet was introduced as an antiseptic by J. Stelling in 1890. . . . Gentian violet occurs as a dark green ("bronze") powder or greenish glistening pieces having a metallic luster. It is soluble in water (1 in 10), alcohol or chloroform, insoluble in ether.

A use mentioned here, not pertinent to this article, is in the treatment of infection with *Strongyloides*; 0.03 Gm. may be given in enteric-coated capsules. Gentian violet is insoluble in petroleum fractions; "pyoktanin" is the same substance with a proprietary name.²

Hyde and Montgomery³ state that "pyoktanin blue is employed in aqueous saturated solution as a parasiticide . . . valuable as a local and painless application in circumscribed patches of weeping or scaly eczema, in many of the ulcerating syphilodermata, in lupus and in ringworm."

Churchman and Michael⁴ reported in 1912 that the dye kills or stops the growth of most gram-positive micro-organisms. Churchman and Russell⁵ in 1913 reported the effect of gentian violet on protozoa and tissues growing in a culture medium. They found tissues unharmed by a dilution of 1:100,000, a strength in which gram-positive organisms were inhibited (diphtheria, *Staphylococcus aureus*, gonococcus and others). They found 10 mg. per kilogram of body weight harmless to rabbits. This dose given intravenously instantly stained all mucous membranes purple, but the stain disappeared. They estimated the concentration in the rabbit's tissues at 1:70,000. They gave an infant with staphylococcic septicemia 5 mg. per kilogram, a dose which proved toxic and depressant

to the white blood cell count, which fell from 20,000 to 10,000 in a few hours. Further doses of 3 mg. per kilogram were well tolerated and were attended by prompt improvement and cure.

In 1920 Churchman⁶ described the bacteriostatic action of gentian violet in the treatment of wounds. While its selective activity was not so clear cut as in vitro, nevertheless there appeared to be resistance on the part of infections due to gram-negative bacteria and response in those due to gram-positive ones. Two amputation stumps carrying diphtheria bacilli healed, and four others in which diphtheria bacilli were not present also healed. Adjacent dermatitis responded promptly. Churchman used the dye in Vincent's gingivitis with results that seemed very satisfactory. He gave a bibliography of his own work complete to 1920.

Farley⁷ (1920) found that a dilution of 1:250,000 of gentian violet in Sabouraud's medium inhibited the gram-positive bacteria but allowed the free growth of fifty-one strains of fungi cultivated from cutaneous tissue. As a restrainer, it was used in the isolation of about twenty strains of pathogenic molds with apparently good results. Mitchell⁸ commented on this work as follows:

The use of 95 per cent alcohol or flaming the tissue seems all that is required inasmuch as all gram-positive bacilli do not grow luxuriantly at room temperature; the most troublesome organism is *Penicillium*, which in the experiment of Farley invariably was found to grow through all concentrations, even 1:1,000; therefore the method is of least value as a restrainer when most needed.

In 1921 Churchman⁹ described the use of gentian violet in the sterilization of closed cavities, especially in gonorrheal arthritis, where great benefit was obtained.

Smith and Casparis¹⁰ (1923) found that gentian violet will inhibit the growth of some staphylococci in a dilution of 1:1,000,000. Young and Hill¹¹ (1924) used gentian violet in a few cases of septicemia. They found that an intravenous dose of 20 mg. per kilogram of body weight killed rabbits in five hours. One child was given 8 mg. per kilogram and lived, being cured, they believed, by further doses of 5 mg. per kilogram. An adult given 6.8 mg. per kilogram became severely nauseated, with vomiting and diarrhea. They decided that 5 mg. per kilogram is a drastic dose but justified by the extremity of the disease, while smaller doses were well tolerated. A person weighing 50 Kg. (110 pounds) can safely receive 0.25 Gm. intravenously, and he therefore cannot be harmed by (non-allergic) absorption of 25 cc. of 1 per cent solution painted on his skin. This amount will paint a surprisingly large area.

The utility of the dye was by this time common knowledge, THE JOURNAL having carried four important articles regarding it between 1920 and 1924. Dr. Elmer Twyman, surgeon, introduced it into the daily practice of Dr. R. L. Sutton Sr.; Dr. Samuel Sweitzer of Minneapolis has long been an enthusiast, having so

1. The Triphenylmethane (Rosaniline) Dyes, in New and Nonofficial Remedies, Chicago, American Medical Association, 1937, pp. 210-212.

2. U. S. Dispensatory, ed. 21, Philadelphia, J. B. Lippincott Company, 1926, p. 314.

3. Hyde, J. N., and Montgomery, F. H.: A Practical Treatise on Diseases of the Skin, ed. 5, Philadelphia and New York, Lea Brothers & Co., 1900, p. 100.

4. Churchman, J. W., and Michael, W. H.: The Selective Action of Gentian Violet on Closely Related Bacterial Strains, J. Exper. Med. 16: 822, 1912.

5. Churchman, J. W., and Russell, D. G.: The Effect of Gentian Violet on Tissue Growing in Vitro, Proc. Sec. Exper. Biol. & Med. 11: 120, 1913-1914.

6. Churchman, J. W.: Selective Bacteriostasis in the Treatment of Infections with Gentian Violet, J. A. M. A. 74: 145 (Jan. 17) 1920.

7. Farley, D. L.: The Use of Gentian Violet as a Restrainer in the Isolation of Pathogenic Molds, Arch. Dermat. & Syph. 2: 459 (Oct.) 1920.

8. Ormsby, O. S., and Mitchell, J. H.: Skin and Venereal Diseases, Chicago, Year Book Publishers, 1920, p. 67.

9. Churchman, J. W.: Sterilization of Closed Cavities by Lavage and Staining with Gentian Violet, J. A. M. A. 77: 24 (July 2) 1921.

10. Smith, D. T., and Casparis, Horton: Gentian Violet in Staphylococci Septicemia, J. A. M. A. 81: 2184 (Dec. 29) 1923.

11. Young, H. H., and Hill, Justina H.: The Treatment of Septicemia and Local Infections by the Intravenous Injection of Mercurochrome, 220-Soluble and of Gentian Violet, J. A. M. A. 82: 669 (March 1) 1924.

been cured of his own impetigo, and Oliver S. Ormsby¹² in his textbook mentioned pyoktanin through two editions to 1921, adding in the fourth edition (1934) that pyoktanin is methyl violet. It may be said that there was a wave of popularity about 1920 to 1925 and that the popularity is again decidedly in its ascendancy.

Gomez-Vega¹³ in 1935 reported the testing of eighteen chemicals with regard to their mycostatic properties. She found the growth of all strains of *Monilia* inhibited in a dilution of 1:100,000 while most of the strains of *Torula* and all the strains of *Saccharomyces*, *Epidermophyton* and *Trichophyton* grew in a dilution of 1:400,000 but not in 1:100,000. A patient with monilial paronychia involving five fingers, long resistant to many types of treatment, was cured in two months by using "the standard gentian violet solution in the Gram stain" (anilin-water gentian violet). Crystal violet, she concluded, and its compounds gentian violet and methyl violet, showed marked specific action or selective activity in vitro on fungi of the *Monilia* and *Torula* genera, while the other fungi tested withstood five times the concentration.

Percival¹⁴ of Edinburgh reported in 1936 the value of aqueous solution of gentian violet in the treatment of seborrheic dermatitis, which is remarkably severe in Scotland and the Scandinavian countries. Before my visit to the Royal Infirmary in 1932 the alcoholic solution had been customarily used, and I pointed out to my friends that there is no irritation when the aqueous solution is employed. Alcohol caused oozing to become even more severe and precluded the use of the dye oftener than a few applications per week, and pastes had to be used between times.

Florance¹⁵ of Sydney testified to the usefulness of the aqueous solution of gentian violet, which he learned from Percival at the Royal Infirmary in 1934, in seborrheic dermatitis of the scalp, impetigo, impetiginized eczema, paronychia and eczematoid ringworm of the hands and feet. It can be used safely in or about the mouth, he says, and on babies' faces, and there is no ill effect from absorption from large areas painted with the dye. He considers it of comparatively little value in more deeply seated pustular conditions, such as furunculosis, sycosis and Bockhart's impetigo, its action being too superficial. He states that the color of the dye is a great disadvantage but that "patients, tired of ineffective ordinary treatment, are usually quite willing to entail this disadvantage for the sake of ultimate improvement."

Many writers have complained that the color is too objectionable to permit of application on exposed surfaces. This is an inadequate argument in my experience, which coincides with Florance's;¹⁵ the color washes off or is exfoliated from the skin within a week. It is damaging to clothing but washes out eventually, especially if encouraged with alcohol or bleached with chlorine water. It has uniformly been my experience that if the patient is forewarned of the staining, is advised to use cheap clothing, bedclothes and towels, and gets the promised relief there are few complaints. Sometimes a little salesmanship is required. The results justify it. In the hospitals the housekeeper is

pacified by a request that the nurses use old linens; and the damage is no greater than when crude coal tar, chrysarobin or permanganate are used—indispensable medicines, all of them.

Gentian violet is cheap, an ounce (30 Gm.) of the crystals costing less than \$1. An ounce makes 3 pints (1.5 liters) of 2 per cent solution with water by practical if not meticulous arithmetic. This is a suitable strength for topical application.

I have used it in the mouth in the treatment of Vincent's angina with great satisfaction. One should swab all involved areas, then offer the patient a mouthful of tepid water to be promptly spit out. This so dilutes the unattached dye that the lips are not stained. The clothing should be protected, of course. The mucous membranes are dyed a deep purple, which washes off within a day with saliva, which is swallowed with safety. The taste is preferable to that of silver nitrate.

In topical application my experience has been that gentian violet does not irritate and is nontoxic. Florance¹⁵ protects himself by saying "It is of low toxicity and except in a few cases of idiosyncrasy to the dye (which may occur with the use of any chemical, however dilute) it can be used on any skin." He gives no instance. I have never seen intolerance; I have never read of it elsewhere. If it occurs, it is exceptionally rare, rarer than intolerance to the weak phenol dilution so nearly universal in dermatologists' prescriptions. If a case of sensitivity to gentian violet should be seen it would be worth reporting. I prescribe no other agent with less fear of irritation. This is a real asset in a drug intended for common use, for whenever a patient of mine unpredictably proves sensitive to my medicines he doesn't accept an explanation and he shows no interest in allergy; he hunts up another doctor.

From my experience, I vouch for the well known external uses of gentian violet. In infectious eczematoid dermatitis it can effectually be combined with wet applications of 1:5,000 mercury bichloride. The superimposition of wet dressings (made of old, clean turkish or hand towels) allays the discomfort of dryness, allows deeper penetration of the dye and destroys by mercury those bacteria which do not yield to gentian. I know of no more effectual means of combating that disease.

Krinsky¹⁶ (1934) reported the utility of gentian violet in the treatment of ulcers of the leg; he sprayed the solution on repeatedly so as to allow the formation of a thick crust. Infection decreased, the area shrank, granulations appeared and healing followed. Thurmon and Chaimson¹⁷ (1937) commend the gentian violet treatment of leg ulcers. I agree with their approval.

Reid's¹⁸ recent essay on the treatment of ulcers is commendable and noteworthy. He stresses the concept that the cure of a wound is a problem of tissue culture and requires more than asepsis and antisepsis. One must prevent and eliminate debris and necrosis; one must immobilize; one must have good blood supply (in leg ulcers this generally implies elevation), and antiseptics must be mild. To dermatologists it is enlightening and edifying to find that surgeons are finally coming to such sensible views. They are frequently enough guilty of expecting the ingredients of

12. Ormsby, O. S.: *Diseases of the Skin*, ed. 4, Philadelphia, Lea & Febiger, 1934, p. 104.

13. Gomez-Vega, Paulina: *Mycostatic Studies on Certain Monilia and Related Fungi*, Arch. Dermat. & Syph. 22: 49 (July) 1935.

14. Percival, G. H.: *Seborrheic Dermatitis*, Brit. M. J. 2: 854 (Oct. 31) 1936.

15. Florance, F. C.: *The Use of Gentian Violet (Aqueous Solution) in Skin Diseases*, M. J. Australia 1: 466 (April 4) 1936.

16. Krinsky, C. M.: *Treatment of Varicose Ulcer with Gentian Violet Spray*, New England J. Med. 211: 803 (Nov. 1) 1934.

17. Thurmon, F. M., and Chaimson, Harry: *Gentian Violet Treatment of Leg Ulcers: Preliminary Report*, New England J. Med. 216: 11 (Jan. 7) 1937.

18. Reid, M. R.: *A Study of Wound Healing*, Ann. Surg. 105: 222 (June) 1937.

a salve to heal the sore, whereas in truth the best the salve can possibly do is to let the tissues heal themselves. Surgeons frequently light on the time-honored dermatologic practice of applying wet dressings to ulcers instead of petrolatum mixed with assorted chemical contaminants and go to press with enthusiastic acclaim over allantoin, thiocresol, insulin¹⁹ solutions, and what not. If one excised a circular disk of skin 2 cm. across from the shin of a healthy young athlete and promptly hospitalized him for the duration of the healing, about twenty-four days would be required for granulation and epithelization, and nothing under the sun could hasten it, but many things, indeed, could slow it down. The use of gentian violet in the treatment of ulcers is very satisfactory, for it is nonirritating and efficiently bacteriostatic and does not interfere with the proliferation of tissue cells on which the healing is absolutely dependent; if allowed to dry after repeated paintings, it forms a crust which fairly immobilizes the lesion.

In the treatment of burns, Ovens,²⁰ among others, has found its advantages over tannic acid to be that (1) the eschar is flexible, (2) it does not contract so much, (3) infection beneath it is easier to detect than beneath the tougher eschar of tannic acid and (4) the aqueous solution keeps indefinitely and does not require to be made up fresh.

In infections more deeply seated than impetigo and eczematoid staphylococcic disease, gentian violet has a valuable and practical use in the prevention of auto-inoculation. A condition well described by the MacKenna²¹ under the title "Multiple Boils in Children" (which they attribute to infection of the sweat glands for no sound reason) manifests itself as numerous, painful, red and bluish red papules and dome-shaped nodules, some of which soften and discharge thin pus; they are grouped but spread by autoinoculation, starting commonly on the back of the head or on the buttocks—a well defined clinical picture. I have treated two such examples by the repeated widespread application of gentian violet in watery solution, which promptly stopped the inoculation of new lesions while the old ones, let alone, underwent their course of absorption, or of softening, discharging and healing.

The U. S. Dispensatory,² twenty-first edition, quotes Klein²² as having found gentian violet of value in the treatment of hoof and mouth disease.

Dr. Sherwin Mella, my colleague, finds it possible to stop the pustulation of a smallpox vaccination promptly by the application of gentian violet, so diminishing the scar and foreshortening the duration of discomfort. This may have significance in the management of variola, which is nowadays so rare that I have had no opportunity to test it.

The dye is commonly used by topical application, which is allowed to dry. This is effectual in most secondarily infected dermatoses and in those primary dermatitides due to gram-positive organisms. I have not seen mentioned my method of application with superimposed wet dressings (1:5,000 mercury bichloride; 1:500 aluminum acetate; 1:3,000 potassium permanganate—these are compatible; acid fuchsin¹ is

not). And I have not seen previous mention of gentian violet solution used as a soak or bath, which seems greatly to enhance its penetration:

CASE 1.—Dr. K., aged 60, has had a dermatomycosis of the hands for twenty years. He used a fluoroscope in setting fractures for many years. The dermatitis, irregularly flaring with vesicles, bullae and secondary infection, while dry, fissured and scaling in the intervals, was treated by roentgen rays from 1932 to 1935. In 1935 the right hand was amputated because of roentgen necrosis and infection of the tendon sheath. The left hand, now telangiectatic and studded with keratoses, inelastic and oozing in patches, promptly vesiculates when any ointment is applied, no matter what the chemical content; I have tried many. There seems to be an actual local hypersensitivity to peruvian balsam. Wet applications including 0.25 per cent silver nitrate, 1:3,000 potassium permanganate, 1:5,000 mercury bichloride, 1:500 aluminum acetate, weak saponated solution of cresol and other soaks have been experimented with but have given no satisfaction. The feet have been treated concurrently, for fungi may be saprophytic and give little clinical evidence of their presence on the feet (especially in the nails) and yet cause disease of the hands which will not heal. I applied gentian violet by swabbing twice a day, and there was improvement. I advised the soaking of the hand in 0.5 per cent gentian violet in water for thirty minutes three times a day. This stained the entire epidermis very much more deeply and uniformly, and improvement was immediate. The soaking was discontinued after three days of energetic staining, and topical application was resumed on circumscribed areas where dermatitis and roentgen keratosis coincided. The progress toward healing is the most satisfactory the patient has experienced.

Gentian violet may be used with good effect in pruritus ani and pruritus vulvae, a fact well known to too few physicians. Itching in these locations is more commonly due to Monilia or other fungi (Epidermophyton), with superimposed medicinal and traumatic irritation, than to any other causes. I agree with Hesseltine²³ (1933), who finds that diabetes causes pruritus because dextrin encourages the growth of mycotic organisms. Plass, Hesseltine and Borts²⁴ have shown that monilial infestation of the vagina is commonplace, and frequently asymptomatic, and occurs in children, virgins and senile women as well as in parous ones. The disease, they found, tends to undergo spontaneous relief, but it may become chronic, with recurrent irritation over a period of months or years. Menstruation has the same temporary beneficial effect on the course of the infection as does delivery in cases associated with pregnancy. They found the local application of 1 per cent gentian violet the best treatment, although alkaline douches may help. They believed that infantile oral thrush may result from infection in the birth canal. Popoff, Ford and Cadmus²⁵ described a case of monilial vulvitis in pregnancy. They quoted Le Baye's summary of the types of vulvovaginal moniliasis:

1. Creamy vaginitis resembling oral thrush with painful and reddened mucosa.

2. Creamy vulvitis, with considerable discharge, not much redness or inflammation, with or without a small amount of intertrigo, which characteristically consists of small, grouped, shallow vesicopustules.

3. Ulcerative vulvitis, severe, superficially ulcerated, with pain, lymphangitis and inguinal adenitis, possibly with mycotic infection of the bladder.

19. Leyton, Nevil: Insulin in the Local Treatment of Persistent Septic Cutaneous Conditions, *Brit. M. J.* 1:70 (Jan. 8) 1938. Holder, H. G., and MacKay, E. M.: The Use of Urea in the Treatment of Infected Wounds, *J. A. M. A.* 108:1167-1169 (April 3) 1937.

20. Ovens, G. H. C.: Treatment of Burns, *Brit. M. J.* 1:93 (Jan. 8) 1938.

21. MacKenna, R. W., and MacKenna, R. M. B.: Diseases of the Skin, ed. 4, Baltimore, William Wood & Co., 1937, p. 59.

22. Klein: *Berl. tierarztl. Wchnschr.*, 1911.

23. Hesseltine, H. C.: Diabetic or Mycotic Vulvovaginitis: Preliminary Report, *J. A. M. A.* 100:177 (Jan. 21) 1933.

24. Plass, E. D., Hesseltine, H. C., and Borts, J. H.: Monilia Vulvovaginitis, *Am. J. Obst. & Gynec.* 21:320 (March) 1931.

25. Popoff, N. W.; Ford, Francis, and Cadmus, W. H.: Mycotic Vulvovaginitis, *Am. J. Obst. & Gynec.* 18:315 (Sept.) 1929.

4. Pseudoleukoplakic vulvitis, in which the mucosa is whitish and opaque, crusts are hard to remove, but no wrinkling, papillomas or hyperkeratosis exists.

5. Eczematoid vulvitis, with vesicopustular inflammation consisting of small punctiform erosions, spreading and resembling intertrigo.

6. Mycotic pruritus of the vulva, with few erosions, perhaps, and little discharge, diagnosable only by smear and culture (and by therapeutic response, I think).

7. Vesiculopustular cutaneous form, manifesting involvement principally of external teguments with small vesicopustules, the vesicular stage being brief.

8. Cutaneous intertriginous eczematous form, which is intertrigo-like, with or without Monilia in genitocrural plica, spreading to the pubis, anal region and medial surfaces of the thighs but with little visible involvement of the vulva.

I have seen forms in the male analogous to Le Blay's types 4, 5, 6, 7 and 8 (excepting the creamy discharge, which is pus plus mucus from the cervix glands) involving the inguinal, pudendal and perianal regions. They respond to similar treatment.

I would add to Le Blay's list, on the basis of my own observations:

9. Inconspicuous vaginitis with disseminated cutaneous involvement, patches of intertriginous dermatitis with small vesicopustules, not amenable to lasting therapeutic effects until the vaginal infestation has been treated properly.



Gentian violet tattoo, visible as a purple stain at the periphery of the scar resulting from the cautery excision of a basal cell carcinoma of the nose of a white woman, aged 79.

10. Moniliids, often consisting of patches of tiny, deep-seated vesicles, which may absorb and result in superficial scaling or which may constitute an inflamed and oozing eczematous dermatitis.

These additions cannot make a claim for originality, as study of such articles as Shel mire's²⁶ and Hopkins's^{26a} on thrush infections and Sulzberger's²⁷ on fungus immunology will reveal. Flandin and his associates²⁸ recently reported a dyshidrosiform leuroides on the hands from monilial infection of the feet. It is commonplace to cure pompholyx of the hands by treating tinea of the feet when the pompholyx is a trichophytid.²⁹ In a white woman, aged 55, I have cured a repetitious pompholyx-like eruption of the hands by means of douches of 1:3,000 potassium permanganate and the application of gentian violet to the genitalia, despite the absence of genital symptoms. The "-id" which I refer to, and which is often curable by the use of gentian violet on and within the female genitalia, has been accu-

ately described, but very differently interpreted, by Adamson,³⁰ who considers the essential lesion of eczema, after excluding external causes of dermatitis, as consisting of circumscribed areas of small or large extent, slightly raised, a dull red and studded closely or sparsely with pinhead-sized crusts or with weeping points.

In monilial pruritus of the male or female inguinal or anal regions, and in the disseminated eruptions resulting therefrom, the removal of grease, the daily application of 2 per cent aqueous solution of gentian violet and the superimposition of 1:3,000 permanganate soaks (or sitz baths) will give speedy relief. A single, proper dose of roentgen rays will stop the itching, often within hours; but it will not cure the condition, nor will repetitions of it, for it does not attack the cause, while gentian violet does.

Bland, Rakoff and Pincus³¹ did not report the method of alleviating the monilial infections that they produced in women experimentally. It will be interesting to learn with what means they obtained cures in one week. Hesseltine³² has recently reported an effectual method of treating monilial vulvovaginitis. Plass,³³ he wrote, recommended from 1 to 2 per cent gentian violet applied from three to six times a week; he³² found, however, that iodine is more effective. Taking advantage of the fact that iodine is liberated from a mixture of potassium iodide and potassium iodate in the acid vaginal secretion, he dispenses gelatin capsules of size 00 or 000, each containing 0.125 Gm. of a mixture of 8 moles of potassium iodide to 1 of iodate in sufficient kaolin to fill the capsule. The kaolin must be treated with ammonia before incorporation in order to prevent its acidity from causing premature reaction. Kaolin acts as a diluent preventing vaginal irritation. In addition to ordering two capsules to be placed in the vagina each night, Hesseltine paints the areas with one-fourth strength compound tincture of iodine once a week. He states that he has had cures in a few days or weeks, whether the patient is pregnant or not.

Plass, Hesseltine and Borts³⁴ demonstrated in seven infected women who delivered babies with thrush, the same organism in each mother and child. As Sulzberger,³⁵ Foerster³¹ and others have pointed out, one class of infantile eczema is mycotic. It is, I believe, exceedingly probable that these cases, in which the "eczema" occurs in deep red, circular and oval, circumscribed but coalescing patches of oozing dermatitis, are due to infection with monilia in the birth canal. These differ distinctly from cases due to contact dermatitis (especially wool, silk, oils and soap) and from those classic cases of infantile eczema wherein the cheeks and extensor surfaces of the extremities are the sites of predilection. I have treated patients with infantile mycotic dermatitis with great benefit by the widespread application of the aqueous solution of gentian violet, for it is efficient in moniliasis, nonirritating and nontoxic. I suggest the prevention of such infantile disease by treating asymptomatic monilial vaginitis in pregnant women before parturition by means of gentian violet and permanganate douches, or in any other way that is effectual.

26. Shel mire, Bedford: Thrush Infections of the Skin, Arch. Dermat. & Syph. 12:789 (Dec.) 1923.

26 (a). Hopkins, I. G.: Moniliasis and Moniliids, Arch. Dermat. & Syph. 25:599-615 (April) 1932.

27. Sulzberger, M. B.: Immunologic Grouping of Trichophyton and Monilia, J. Immunol. 23:73 (July) 1932.

28. Flandin, C.; Rabreau, H., and Guerra, P.: Levurides dyshidrosiformes des mains consécutives à mycose interdigito-plantaire à levures; intradermo-réactions, Bull. Soc. franc. de dermat. et de syph. 42:462 (Feb. 13) 1936.

29. William, C. M.: Trichophytid of the Hands, Arch. Dermat. & Syph. 27:973 (June) 1933.

30. Adamson, H. G.: Eczema as a Clinical Entity, Its Fundamental or Essential Lesion, Brit. J. Dermat. & Syph. 46:515 (Dec.) 1934.

31. Bland, P. B.; Rakoff, A. E., and Pincus, I. V.: Experimental Vaginal and Cutaneous Moniliasis, Arch. Dermat. & Syph. 30:769 (Oct.) 1937.

32. Hesseltine, H. C.: Biologic and Clinical Import of Vulvovaginal Mycoses, Am. J. Obst. & Gynec. 34:855 (Nov.) 1937.

33. Sulzberger, M. B.: Allergy in Dermatology, J. Allergy 7:325 (May) 1936.

34. Foerster, H. A.: Infantile Eczema, J. Oklahoma M. A. 20:264 (July) 1937.

Impetigo or "pemphigus" of the newborn, as Cole and Ruh³⁵ observed in 1914, is a staphylococcal infection, and in its treatment "ointments are worse than useless, serving only to help spread the disease." They recommended astringent agents and dusting powders, a plan of treatment the wisdom of which has been fully borne out by the experience of Swendson and Lee,³⁶ who used silver nitrate and a dusting powder; by that of Carter and Osborn,³⁷ who introduced strong silver nitrate solution into each bulla as it appeared and condemned ointments, and by that of Bowman,³⁸ who used 3 per cent solution of mercurochrome because it is less caustic. Gentian violet solution should here be ideal. It stops autoinoculation in infectious eczematoid dermatitis,³⁹ the identical disease in adults, different only because of the absence of papillae in the dermis of the infant. Gentian violet could easily be used as a bath in the treatment of this condition, and 1:500 dilution would stain the epidermis sufficiently.

Veld sore, as described by Harman⁴⁰ (1904), is in my opinion infectious eczematoid dermatitis, for it starts in a scratch, spreads with herpetoid lesions, is caused by staphylococci and is not benefited by any greasy application. It could be treated effectively with gentian violet.

It is correct to distinguish between staphylococcal and streptococcal bullous dermatitis, I think, as Tachau⁴¹ does. Impetigo, a name properly attached to the streptococcal disease, is characterized by thin walled vesicles; infectious eczematoid dermatitis, the staphylococcal disease, presents thicker walled, more deeply seated lesions which tend to become pustular and which are often associated with follicular and furuncular elements. The early blister in either case contains clear fluid. The treatment is similar, although impetigo generally yields more readily, being more superficial.

Ormsby,⁴² describing the utility of naftalan, permanganate and other drugs in the treatment of yeast and contact dermatoses, has reported gentian violet valuable in the therapy of anogenital and oral thrush, intertrigo and mycotic paronychia.

Gentian violet may be used in ointments. The saturated aqueous solution can be incorporated in any vehicle that will take up water, such as hydrous wool fat. I have found ointment preparations generally unsatisfactory. The dried, greaseless surface after application of the aqueous solution is commonly, as in impetigo, decidedly advantageous. The ointment suffers severely from the objection of messiness, for a dry surface does not stain when touched, but the ointment stains always.

There is, in addition to its mere unsightliness, a contraindication to the use of gentian violet. Case 2 and the accompanying illustration show that it may tattoo the skin with considerable permanence. This observation has not previously been reported, so far as I know.

CASE 2.—Mrs. L. R., aged 79, white, seen Aug. 6, 1937, had a basal cell carcinoma involving the bridge of the nose and the

right lower eyelid. It had first been noticed twenty years previously and had been "burned" several times. I excised it with the pointed cautery with a margin of normal tissue laterally, peeling the skin and thin subcutaneous tissues from the cartilage and nasal bones beneath. The wound was painted with 2 per cent aqueous solution of gentian violet. It was dressed with white petrolatum each day by the patient or by one of her family, and I saw her once a week. By August 27 the burned tissue had sloughed off and granulation was well along, but the edges were thickened, red and tender. I applied gentian violet solution as before. When I saw the lesion September 10 it had healed and consisted of a sound scar but was stained purple, especially at the edge. The color extends into the tissue adjacent to the scar, where, presumably, it was carried by phagocytes after it had been applied to the infected wound. The purple color has faded only a little in eight months.

This case is one of two I have seen in which the application of gentian violet resulted in tattooing. If the dye is applied before the burned tissue sloughs, it is carried away in the sloughing. If it is applied to the granulations, it is liable to tattoo more or less permanently, although this must be quite unusual. It is therefore not advisable to apply gentian violet to ulcerative lesions of the face. This does not include impetigo, the lesions of which are superficial and heal without scar. While I⁴³ have observed tattooing of impetiginized areas resulting from the application of an iron salt, I have not seen tattooing produced by gentian violet in many cases of impetigo contagiosa. Here, too, circumstances must be exceptional when tattooing is to result, but as yet I do not know what they are.⁴⁴

SUMMARY

1. Gentian violet, a mixture of pentamethylpararosaniline chloride and hexamethylpararosaniline chloride, is a medicine of great value in the topical treatment of those external diseases wherein gram-positive bacteria play a part. It is a rich purple dye, available inexpensively in crystalline form, soluble in water, alcohol and chloroform and insoluble in petroleum fractions.

2. Gentian violet is nontoxic and safe to use in local application by swab, soak or bath and on the skin or mucous membranes, and it is notably nonirritating. It has been reported nontoxic in doses of less than 5 mg. per kilogram of body weight when given intravenously to the human being and curative in cases of staphylococcal septicemia.

3. Gentian violet is actively and selectively bacteriocidal or bacteriostatic to gram-positive microorganisms, which include *Staphylococcus aureus*, the gonococcus and diphtheria bacillus; to *Monilia* and, to a less extent, to *Trichophyton*, *Epidermophyton*, *Saccharomyces* and *Torula*. It possesses this property both in vitro and in clinical use.

4. It discolors clothing, skin and linens but can be removed by repeated washings with water and alcohol or can be bleached with chlorine. Its usefulness commonly, although of course not invariably, outweighs the disadvantage of its conspicuous color.

5. Gentian violet in aqueous solution is not irritating; I have not found described nor have I witnessed hypersensitive reactions to its presence on the skin. In alcoholic solution, the alcohol is irritant; alcoholic solutions have very little usefulness on this account. The incorporation of the dye in a salve offers very few

35. Cole, H. N., and Ruh, H. O.: Pemphigoid of the Newborn (Pemphigus Neonatorum), J. A. M. A. 63:1159 (Oct. 3) 1914.

36. Swendson, J. J., and Lee, S. R.: Impetigo Contagiosa Neonatorum, with a Report of Four Epidemics, J. A. M. A. 96:2081 (June 20) 1931.

37. Carter, H., and Osborn, H. A.: Neonatal Dermatitis, Brit. M. J. 1:465 (March 7) 1936.

38. Bowman, A. K.: Pemphigus Neonatorum, Brit. J. Dermat. & Syph. 48:484 (Oct.) 1936.

39. Engman, M. F., Sr.: An Infectious Form of an Eczematoid Dermatitis, Am. Med. 4:769 (Nov. 15) 1902.

40. Harman, N. B.: The Clinical and Pathologic Character of Veld Sore Prevalent Among Troops in South Africa, J. Path. 9:1, 1904.

41. Tachau, P.: The Bacteriology of Impetigo Contagiosa, Brit. J. Dermat. & Syph. 50:113-118 (March) 1938.

42. Ormsby, O. S.: Yeast Dermatoses: Contact Dermatitis, J. Michigan M. Soc. 37:135-140 (Feb.) 1938.

43. Sutton, R. L., Jr.: Pigmentation of the Skin Due to Iron (Copper) Applied Locally, J. A. M. A. 105:112 (Jan. 9) 1937.

44. The possibility that this discoloration might be the result of infection with *B. violaceus*, as observed by Black and Shahan in THE JOURNAL (April 16, 1938, p. 1270), might be entertained. I have not seen what they described; no cultures were made in my case.

advantages and several disadvantages and is commonly, although not invariably, an unsatisfactory method of use. The aqueous solution, 1 or 2 per cent for topical application and from 0.1 to 0.5 per cent for soaks or baths, is the most practicable way to use it.

6. I have found it valuable in the treatment of monilial infections, especially pruritus vulvae and pruritus ani of this origin and the cutaneous eruptions dependent on them; of impetigo, infectious eczematoid dermatitis, infantile furunculosis and secondarily infected eczema, infantile or adult; of Vincent's angina, leg ulcers and ulcers following third degree burns, and of recurrent dermatomycoses, including tinea of the hands and feet. Others have attested its usefulness in foot and mouth disease and vaccinia, as well as in most of those conditions which I quote from my experience.

7. It is urged on the grounds of reason and analogy that gentian violet be tried and assessed in the treatment of pemphigus neonatorum (impetigo, or exfoliative dermatitis of the newborn) and diphtheria of the skin and in the control of pustulation in smallpox and of mycotic infantile eczema.

8. It may be possible to prevent all cases of mycotic infantile eczema that result from infection in the birth canal by the proper antepartum treatment of symptomatic or asymptomatic monilial vulvovaginitis.

9. Gentian violet has been observed to produce tattoo when applied to a deep burn on the face.

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THE FEMALE PERINEUM

EPISIOTOMY AND A TECHNIC FOR ITS REPAIR

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By the term perineum is meant all those structures, or anatomic soft parts, which correspond to the inferior aperture or outlet of the pelvis.

With the marked increase in the percentage of hospital deliveries and in the use of obstetric analgesia during the past decade, surgical incision of these soft parts (episiotomy) during labor has become a common practice by even the most unskilled accoucheurs.

Unfortunately this operation, one of the niceties of obstetric art, is often accomplished with such little regard for either the manner of incision or the technic of repair that the outcome is frequently as undesirable as that which is often observed when no such intervention is attempted. It is not surprising, therefore, that among obstetricians there is a growing sentiment that this is the most abused of obstetric procedures.

On those of us to whom is entrusted the teaching of obstetrics there falls a not altogether undesired criticism for these unfavorable results, since too often our textbooks, our lectures and our clinical demonstrations omit the details of anatomy and technic which the novice requires. The desire for this instruction may be discerned in the multitude of questions concerning the procedure and the structures involved, which, in both classroom and delivery room, are asked by the inexperienced, students, interns and practitioners alike.

Such repeated requests for detailed information have been, more than anything else, the incentive for this presentation.

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The argument that such operative intervention is not safe in the hands of the average obstetric attendant does not alter the fact that it is the general practitioner who delivers the large majority of expectant mothers. I most heartily subscribe, therefore, to the dictum of my friend and early teacher, Arthur H. Bill,¹ that "we must stop lowering our standards to the level of

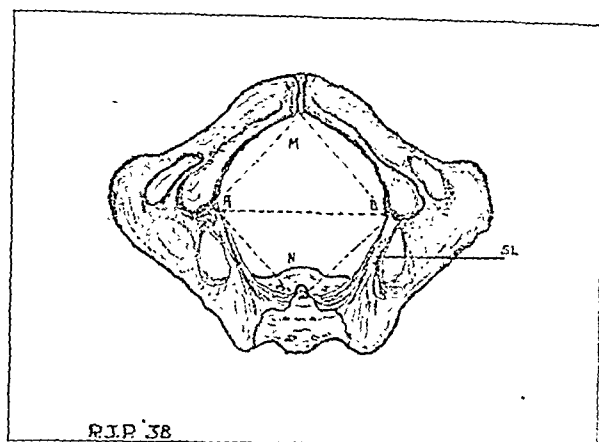


Fig. 1.—The female outlet seen from below: AB, the transverse (bisischial) diameter; M, the urogenital triangle; N, the anal triangle; SL, the sacrotuberous ligament.

the untrained man and must begin to think of training men to do the things which we consider ideal."

However, no mere word description of the subject of perineal incision becomes immediately lucid without first a consideration of the chief anatomic features with which the procedure has to deal. First of these is the outlet of the bony pelvis itself (fig. 1).

As originally suggested by Klein,² this may be divided into two triangles (M and N) which have a common base, the bisischial diameter of the outlet (AB) joining the widest parts of the ischial tuberosities. This imagi-

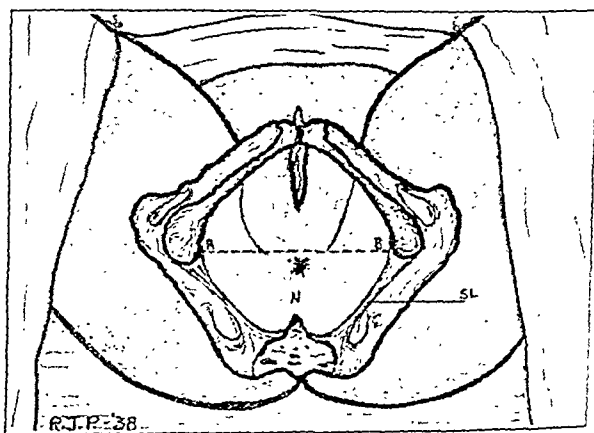


Fig. 2.—Diagram to show the relation of the bony pelvic outlet to the female perineum (seen from below).

nary line traverses the perineum just anterior to the anus.³ The apex of the anterior or urogenital triangle (M) is formed by the subpubic ligament, while its sides are formed by the ischiopubic rami. The poste-

1. Bill, A. H.: Analgesia and Anesthesia and Their Bearing upon the Problem of Shortened Labor, *Am. J. Obst. & Gynec.* 31:266-81 (Nov.) 1937 (discussion p. 881).

2. Klein, R.: Eine neue Methode der Beckenausgangsmessung, *Monatschr. f. Geburtsh. u. Gynäk.* 2:165-184, 1895.

3. Pieri, R. J.: Funnel Pelvis, Its Incidence and Importance, and a New Pelvimeter for Outlet Mensuration, *Surg., Gynec. & Obst.* 59: 891-898 (Dec.) 1934.

rior or rectal triangle (*N*) is bounded laterally by lines from the extremities of the transverse diameter (*AB*) to the sacrococcygeal joint, which forms the apex. The boundaries of these two figures offer considerable difference, physiologically, in that the anterior triangle possesses for its sides rigid, nonyielding bony barriers, while the sides of the posterior triangle are soft, yielding structures, as the various muscles and fasciae about to be described, and the sacrotuberous ligaments (*SL*).

The various relations between the transverse diameter of the outlet and the triangles just described can better be visualized by figure 2, in which the vulva, perineum and anus, as well as the bony structures, are depicted. Here the importance to the accoucheur of accurate knowledge of the underlying anatomic structures becomes more manifest.

The first step in the study of these structures consists in the removal of the skin and the superficial layer of the superficial fascia (panniculus adiposus), which are identical with the integument and the panniculus found elsewhere in the body (fig. 3). It will now be disclosed that *AB*, the imaginary line denoting the bischial diameter, corresponds rather closely to an ana-

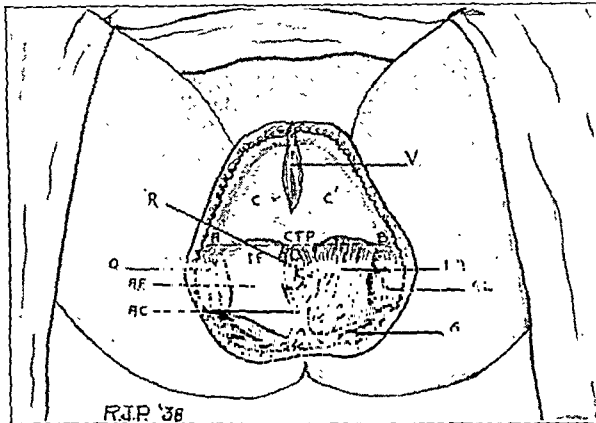


Fig. 3.—Dissection of the female perineum (after Beck). The skin and superficial fascia have been removed. *V*, the vestibule; *CC'*, Colles' fascia covering the urogenital triangle; *CTP*, central tendon of perineum (perineal body); *R*, anus surrounded by external sphincter; *AF*, ischio-rectal fossa; *IF*, inferior fascia of pelvic diaphragm (anal fascia). On the left this has been removed to show *LA*, levator ani muscle; *O*, obturator internus fascia; *AC*, anococcygeal body; *SL*, sacrotuberous ligament; *G*, gluteus maximus muscle.

tomic division between the anterior (urogenital) and the posterior (anal) triangles of the outlet. The anterior triangle is found covered by a fairly dense fascia (Colles' fascia), which is the deep layer of superficial fascia attached laterally to the rami of the pubes and ischia. It is continuous anteriorly and cephalad with the deep layer of the superficial abdominal fascia (Scarpa's fascia) and laterally with the deep superficial fascia of the thigh. Posteriorly, and corresponding generally with the transverse diameter of the outlet, it fuses with the posterior limits of the so-called triangular ligament (urogenital trigon).

In this dissection it will be seen that the anal triangle (*N*) has no such structure as that described as Colles' fascia and that removal of the superficial fat in this region discloses (fig. 3) the external rectal sphincter, the anococcygeal body, the ischio-rectal fossae and the inferior fascia of the pelvic diaphragm (anal fascia), which covers the inferior aspect of the levator muscles. The gluteus fibers usually encountered in this dissection have no obstetric significance.

It is important at this point to become cognizant of the fact that in both their anatomic features and their function the anterior (urogenital) triangle differs markedly from the posterior (anal). Careful dissection of the anterior triangle discloses that it is composed of various perineal compartments arranged in layers (fig. 4), the most superficial (inferior) of which is opened

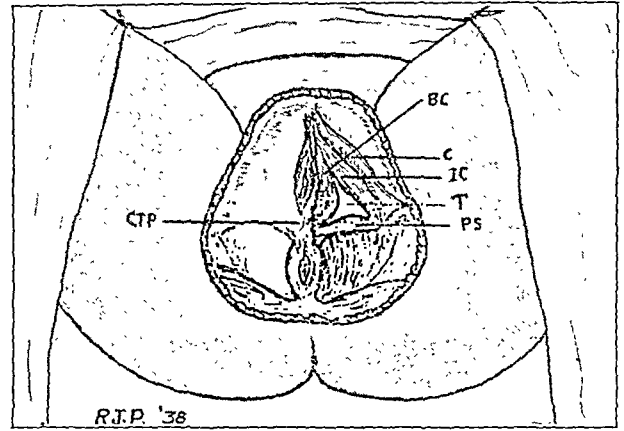


Fig. 4.—Dissection of the anterior (urogenital) triangle: *C*, Colles' fascia reflected to show the muscles of the left superficial perineal compartment; *BC*, bulbocavernosus; *IC*, ischio-cavernosus; *PS*, superficial transverse perineal; *T*, inferior fascia (floor) of deep compartment (urogenital diaphragm, urogenital trigon, or triangular ligament).

by reflecting Colles' fascia laterally. This exposes to view the ischio-cavernosus, bulbocavernosus (constrictor cunni) and the superficial transverse perineal muscles.

The former arises on the mesial surface of the ischial ramus, passes anteriorly and medially and becomes inserted on its own side into the fascia of the inferior surface of the clitoris.

The bulbocavernosus (constrictor cunni, or sphincter vaginae) arises in the central tendon of the perineum (*CTP*), passes anteriorly, lateral to the vagina, and is inserted into the fibrous sheath of the clitoris.

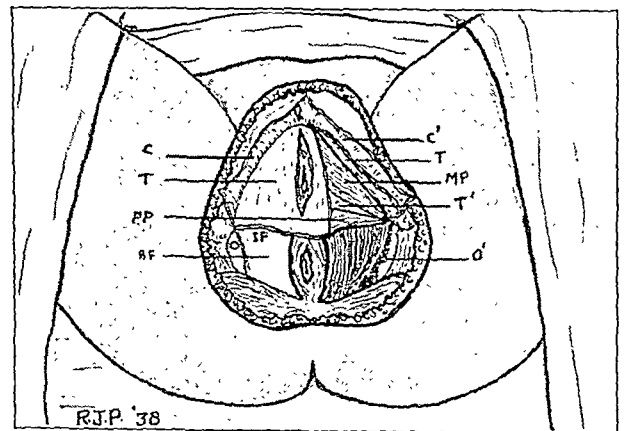


Fig. 5.—Further dissection of the urogenital triangle: *CC'*, Colles' fascia has been reflected and the contents of the superficial compartment removed. On the left *T*, the inferior fascia of the urogenital diaphragm has been reflected to show the muscles of the deep perineal compartment. *MP*, sphincter muscle of the membranous urethra. *PP*, deep transverse perineal muscle. *T'*, superior fascia (roof) of urogenital diaphragm. In the posterior (anal) triangle the obturator fascia (*O*) has been removed on the left, showing the underlying fibers (*O'*) of the obturator internus.

The superficial transverse perineal muscle takes origin from the ischial tuberosity and extends medially across the superficial perineal compartment or space to its insertion into the central tendon of the perineum.

The roof of the compartment thus dissected can be discerned (fig. 4 *T*) as the inferior of two layers of a thin fascia which enclose the so-called deep perineal compartment (the urogenital diaphragm, triangular ligament or urogenital trigon).

Deeper dissection, with reflection of all the structures of the superficial compartment and the inferior layer of fascia (floor) of the urogenital diaphragm (fig. 5), reveals the contents of the deep compartment.

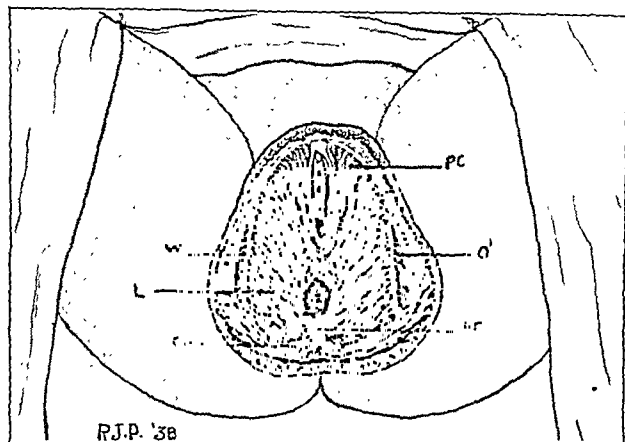


Fig. 6.—The levatores ani (pelvic diaphragm) seen from below. The inferior (anal) fascia has been removed. PC, pubococcygeus fibers; L, ileococcygeal portion; CG, coccygeus muscle; W, the "white line."

Arising from the ischial ramus laterally and extending medially across the deep perineal interspace, the deep transverse perineal muscle (*PP*) becomes inserted into the central portion of the perineal body.

From the ischiopubic ramus the sphincter muscle of the membranous urethra (*MP*) passes anteromedially to join its fellow of the opposite side, some fibers surrounding the urethra while others are attached to the lateral walls of the vagina.

The roof of the deep perineal compartment (*T'*), as previously indicated, is the superior fascia of the triangular ligament. This "ligament," or diaphragm, is the

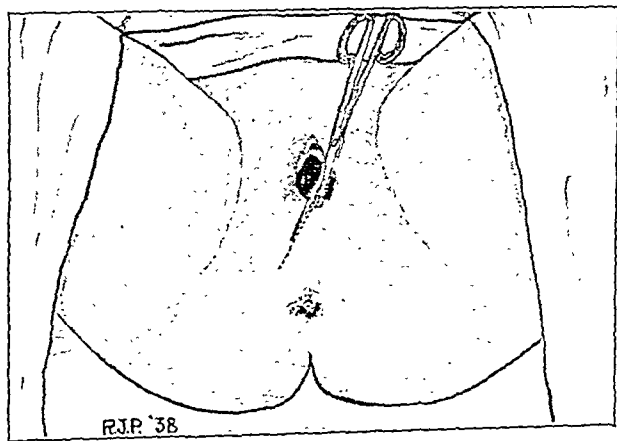


Fig. 7.—Right mediolateral episiotomy.

continuation of the obturator fascia which crosses the anterior triangle of the pelvic outlet. Laterally its two layers are attached to the ischiopubic rami. Posteriorly, and roughly coinciding with the bischial line, they fuse with each other and with Colles' fascia. In the midline the various compartments described (figs. 3, 4 and 5) are perforated by the urethra and vagina.

The ischiorectal fossae (*IF*) extend anteriorly from the posterior (anal) triangle between the superior fascia of the urogenital diaphragm and the inferior levator (anal) fascia. Thus the superior fascia of the urogenital trigon forms also the floor of the anterior extensions of the ischiorectal fossae, while the roof is formed by the anal fascia (inferior layer of the pelvic fascia).

At this point it might be well to describe briefly the various planes of the pelvic fascia. The anal fascia covering the inferior surface of the levator ani is the inferior of two layers of fascia (the pelvic fascia). The upper layer covers the superior surface of the pelvic diaphragm (levator ani). Laterally on each side, and corresponding closely to the origin of the levator muscle, both layers of this pelvic or diaphragmatic fascia fuse with the fascia which covers the inner surface of the obturator internus. The ridge so formed is called the arcus tendineus of the levator ani, or the "white line." Shortly below (medial to) this line the layer of fascia on top of the levator ani (superior layer of levator fascia) thickens to form a bandlike base or

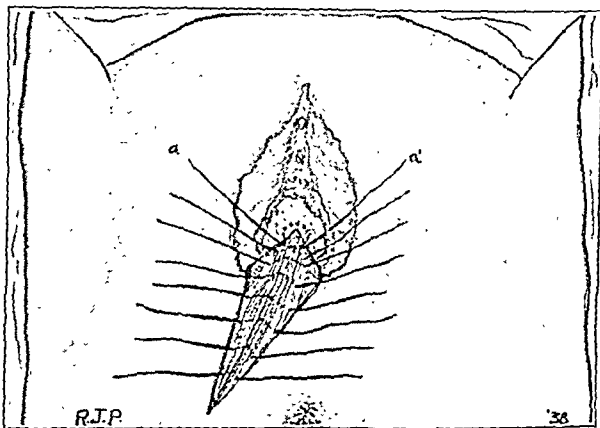


Fig. 8.—First layer of sutures. (The placenta has been delivered.) The first stitch (submucous) is passed widely around the upper angle (*aa'*).

ridge of fascia, the tela endopelvina,⁴ or main sheet of visceral fascia,⁵ which gives off four layers, one going to the bladder, a second between the bladder and the vagina, a third between the vagina and the rectum and the fourth posterior to the rectum. The proper support of the pelvic viscera depends on the integrity of these fascial layers as well as on the integrity of the muscles.

Removal of the various structures which comprise the urogenital trigon and of the inferior levator (anal) fascia discloses (fig. 6) the arrangement of the fibers of this most important paired muscle, the pelvic diaphragm. For purposes of description as well as anatomically two parts of each levator are visualized. The first portion (pubococcygeus) arises slightly external to the symphysis and from 3 to 4 cm. below the pelvic brim. These fibers (fig. 6 *PC*) pass directly backward, lateral to the vagina, some decussating in the perineal body (a point disputed by some), others mingling with the longitudinal fibers of the vaginal wall, still others

4. Tandler, J.: *Handbuch der Gynakologie* (Stoeckel), Munich, J. F. Bergmann, 1930, volume 1, first half, p. 342.

5. Sears, N. P.: *Fascia Surrounding Vagina, Its Origin and Arrangement*, *Am. J. Obst. & Gynec.* 25: 484-492 (April) 1933; *Further Studies of Fascial Planes Surrounding Vagina*, *ibid.* 26: 614-620 (Oct.) 1933; *Pelvic Fascia; Histologic Structure of Planes of Tissue Used in "Fascia Overlapping" Operation to Correlate Conflicting Views*, *ibid.* 29: 834-839 (June) 1935.

ending in intimate relation with the fibers of the external sphincter, while the remainder join with those of the opposite side posterior to the rectum (anococcygeal body) prior to their insertion in the coccyx.

The second (lateral) portion of the levator (ileococcygeal portion) may be seen arising from the "white line" of the tendinous arch, which extends downward and backward to the ischial spine, where it is about 5 cm. below the plane of the inlet. The greater portion of these fasciculi pass downward and backward, some joining fibers from the opposite side, others becoming inserted in the anococcygeal body (fig. 6 AC) and the remainder into the lateral margins of the coccyx. Posterior to the levator closure of the aperture of the outlet is completed by the coccygeus and to some extent the piriformis muscle, neither of which is of great obstetric significance.

Thus the conformation of the pelvic floor assumes somewhat the shape of a trough, closed behind (anococcygeal body) and open in front (vagina). The function of this V shaped arrangement of structures, aside from its mechanism in giving support to various viscera, becomes manifest during childbirth, as it guides the

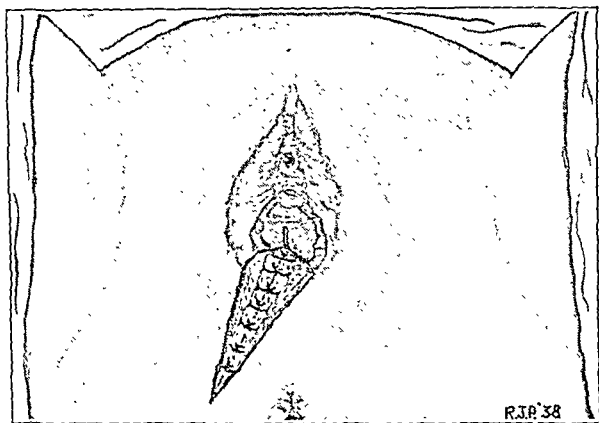


Fig. 9.—First layer of sutures tied and cut.

presenting part along the path of least resistance by way of the vagina through the pelvic outlet and into the outside world.

That portion of the perineum which lies between the vagina and the anus is termed the perineal body (fig. 3 CTP). It is composed, as earlier disclosed, of the various perineal muscles, which are joined at this point, and of their various fascial investments. During pregnancy, through vascular and other changes, the perineal body as well as the entire floor of the perineum projects from 2 to 4 cm. below the customary level of the non-pregnant state.

As a result of excessive strain during labor, overstretching or laceration of the muscles of the perineum frequently occurs. This is invariably accompanied by single or multiple tears in one or more of the various layers of pelvic fascia, which in many places is in such intimate relation to the perineum as to be considered a part of it. These injuries, by weakening the support of the pelvic organs, constitute one of the chief factors in the production of such sequelae as cystocele and rectocele.

By episiotomy is meant the operation whereby the perineum is incised during delivery to prevent laceration of the soft parts at the pelvic outlet. It merely substitutes "a clean cut of definite size in a place where

it can do the least harm for a ragged tear of indefinite size in a place where it may cause immediate danger and subsequent injury."⁶ Strictly speaking, any such incision of the perineum may be termed episiotomy, whether lateral or bilateral, mediolateral or central. The lateral incisions have fallen more or less into disfavor. By popular usage the term episiotomy has

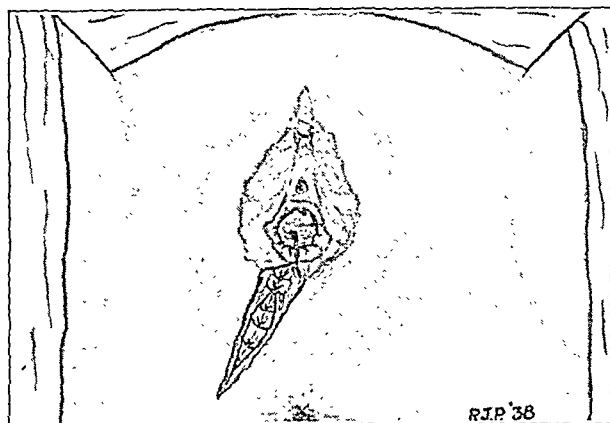


Fig. 10.—The second layer of sutures includes the deep superficial fascia. The "crown" stitch (buried) includes the bulbocavernosus fibers.

come to signify an incision of the vulvar ring directed away from the sphincter ani (mediolateral episiotomy), to distinguish it from "perineotomy," or central episiotomy, an incision along the central raphe and directed toward the sphincter.

As an obstetric procedure it is nothing new, since it is recorded that the vulva was incised by Ould in 1742. In the years that followed, Michaelis (1810), and subsequently Ritgen, Schultz, Scanzoni, Colpe and Credé, in as many variations of technic as there were

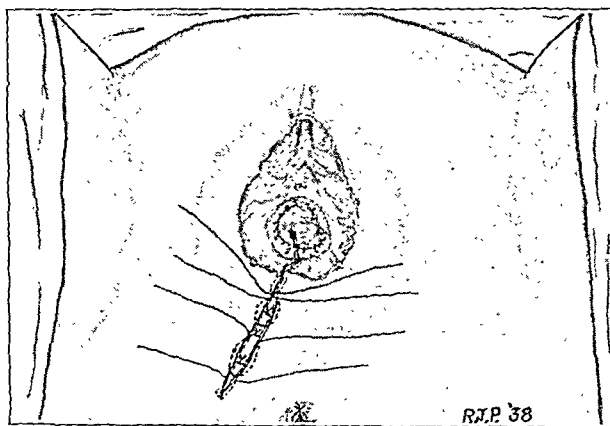


Fig. 11.—Subcuticular interrupted sutures close the skin.

accoucheurs, made one or several incisions to secure the additional space needed for delivery. It is not clear whether these outstanding early protagonists repaired their incisions or left them to nature. Anesthesia during childbirth was not then the vogue.

After 1918, when Pomeroy⁷ presented a paper on the subject, episiotomy gained increasing favor among the profession, particularly after many other leading

6. Cameron, J. C.: *An American Text-Book of Obstetrics*, Philadelphia, W. B. Saunders Company, 1895.

7. Pomeroy, R. H.: Shall We Cut and Reconstruct the Perineum for Every Primipara? *Am. J. Obst.* 78: 211-220 (Aug.) 1918.

authorities, notably De Lee,⁸ emphasized the advantages of the operation both to the baby and to the mother. The indications and contraindications have been enumerated by Schauta,⁹ Anspach,¹⁰ Berlind,¹¹ Galloway,¹² Taylor¹³ and others and are beyond the scope of this paper. However, expressed in a few words, the advantages to the baby lie chiefly in the shortened period of

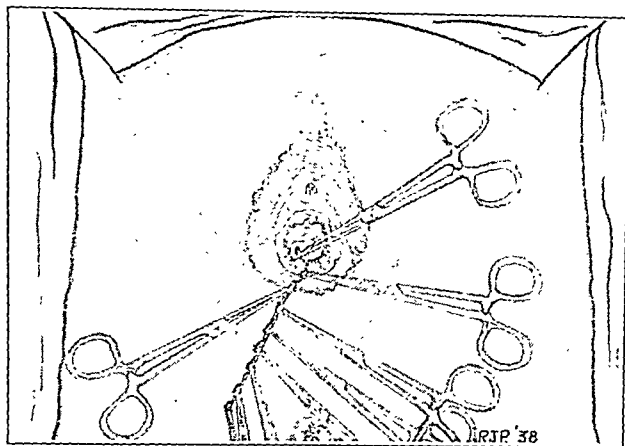


Fig. 12.—Allis clamps are used to seal the edges of the incision.

pounding of the fetal head on the perineum and the consequent reduction in the incidence of cerebral injury. As for the mother, the second stage is shortened, while the restoration of the pelvic floor after episiotomy properly performed is usually better than is observed even after many normal deliveries in which no visible lacerations occur, the integrity of the soft parts remaining often as unimpaired as in their nulliparous state.

The technic of the incision is simple. In the absence of any indication for earlier intervention delivery is not attempted until the presenting part is on the levators and there is evidence of pressure on the vulvar outlet. This is recognized both by some bulging of the perineum and by a beginning distortion of the anus.

After the usual preparation for delivery the bladder is catheterized and the perineum gently "ironed out" with the liberal use of neutral liquid soap. Care should be exercised here to avoid overstretching of the parts and too rapid dilation. The former causes future loss of muscle tone and damage to the fascia, while the latter favors laceration.

The site of incision depends on the operator, the right or left mediolateral episiotomy being favored by most accoucheurs chiefly because it avoids the rectum. The point of direction extends from the midpoint of the posterior aspect of the vaginal orifice and proceeds along a line midway between the sphincter and the ischial tuberosity (fig. 7). This is best accomplished by means of sharp scissors, the angle of the blades being placed at the middle point of the fourchette, the inner blade inserted between the presenting part and the parts to be incised. The external blade demarcates

the direction and extent of the incision, which is usually accomplished by a single quick motion. Grasping the parts between the thumb and forefinger facilitates an accurate incision. With the operator seated during delivery, as is the custom with me, the right-sided incision is the most easily accomplished. The particular structures severed by the episiotomy depends on the length of the incision. At times, as recommended by Dührssen in pathologic cases, even the ischioanal fossae are involved. Ordinarily, however, one severs the skin, Colles' fascia, the bulbocavernosus, the transversus perinei, the urogenital septum and the median fibers of the pubococcygeus portion of the levator ani.

Following delivery, which usually shortly succeeds the episiotomy, bleeding ceases. If persistent, hemorrhage is easily checked by means of a firm tampon until sutures are applied. Delivery of the placenta is to be preferred before the repair is begun in order that a vaginal sponge, inserted high in the birth canal, may assist in keeping the field clear and because the placenta, by its bulky size, may cause damage if delivered after suturing is completed. Any suitable retractor may be used for exposure if desired.

Ordinarily on inspection of the incision the details of individual anatomic structures are not recognized, except for muscle tissue and Colles' fascia, which is usually found retracted under the integument and superficial panniculus. More accurate identification of layers is unnecessary.

The technic of repair about to be described has seemed to me to offer certain advantages over other methods which I have employed in that it follows certain established surgical principles¹⁴ and causes a minimum amount of postoperative discomfort. All sutures are of fine texture, my opinion coinciding with that of Harvey¹⁵ that it is never necessary to use any suture stronger than the tissue through which it passes.

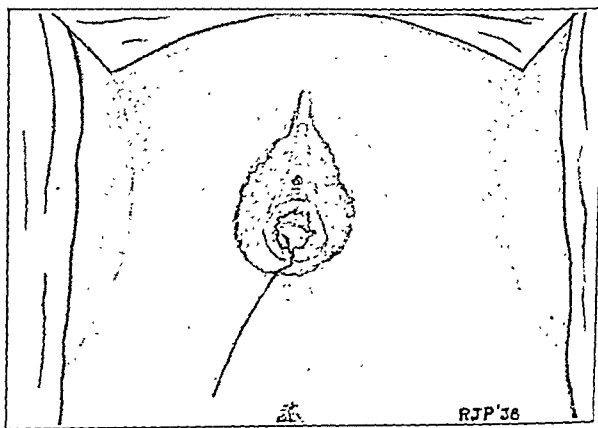


Fig. 13.—Removal of the Allis clamps leaves a fine linear scar.

Single sutures are preferred to double sutures, since the difference in their holding strength is practically negligible.

The first layer of sutures, therefore, is interrupted (chromic No. 1), passed widely to reduce tension on the line of healing and tied just securely enough to secure coaptation. Care is observed, of course, to avoid perforation of the rectum. The first stitch (fig. 8 aa') is submucous and is passed in circular fashion around

8. De Lee, J. B.: *Principles and Practice of Obstetrics*, ed. 5, Philadelphia, W. B. Saunders Company, 1929.

9. Schauta, Friedrich: *Lehrbuch der gesamten Gynäkologie: Eine Darstellung der physiologischen Funktionen und der Funktionsstörungen der weiblichen Sexualorgane im schwangeren und nichtschwangeren Zustande*, part I, *Geburtshilfe*, ed. 3, Leipzig and Vienna, F. Deuticke, 1906, p. 715.

10. Anspach, B. M.: Value of a More Frequent Employment of Episiotomy in the Second Stage of Labor, *Am. J. Obst.* 72:711-714, 1915.

11. Berlind, M. M.: Episiotomy in Prematurity as Prevention Against Cerebral Hemorrhage, *M. J. & Rec.* 135:180-182 (Feb.) 1932.

12. Galloway, E. C.: Management of Vertex Presentation by Episiotomy and Outlet Forceps, *Illinois M. J.* 67:526-529 (June) 1935.

13. Taylor, C. H., Jr.: Indications and Technic of Episiotomy, *Am. J. Surg.* 35:403-408 (Feb.) 1937.

14. Hess, O. W.: The Use of Catgut in the Perineum, *Surg., Gynec. & Obst.* 62:308-314 (Sept.) 1936.

15. Harvey, C. S.: Concerning the Suture, *Surg., Gynec. & Obst.* 58:791-793 (April) 1934.

the upper angle of the incision. This brings together any fibers of muscle or fascia which might have separated under the mucosa. Neglect in this detail favors subsequent "pouching" of the posterior vaginal wall, or even a later rectocele, if such an occult separation exists.

The second layer of sutures (fig. 10) includes the fascia of Colles. No. 0 chromic gut is selected here because of its ample holding strength (8 pounds) in fascia.¹⁶ It is at this time that the "crown" stitch is inserted, bringing together the severed portions of the hymen, the needle being inserted obliquely upward in the base of the labia minora to secure in its grasp the retracted fibers of the severed constrictor cunni (bulbo-cavernosus) muscle. To overcome this retraction and to prevent gaping of the vagina, two such sutures may be required. To avoid "dead space" any muscle underlying the fascia is included in the bite of the needle as it is passed from one side to the other.

When completed the second layer usually brings into apposition the edges of both the mucosa and the skin respectively. Frequently, however, to insure this a third (subcuticular) layer of 00 or 000 catgut (fig. 11) is placed, a fine skin needle being used. No sutures are passed through either vaginal mucosa or skin, those portals of entry which invite pathogenic organisms from without to follow the suture into the tissues below thus being eliminated.

As a final step the line of incision is effectively sealed by gentle coaptation of its everted edges by means of Allis clamps (fig. 12). A dozen of these instruments are ready for use in each case. These are applied and permitted to remain clamped for only a few moments while the vaginal pack is removed, any blood clots are expressed and preparations are completed for the transfer of the patient to her bed. Removal of the clamps leaves a fine linear scar, which for a brief interval remains elevated as the result of the eversion and then becomes almost imperceptible as the elevation recedes. It is surprising how apposition of the cut edges of the wound in this manner makes adherence quite effective and renders unnecessary even the use of skin clips, as recommended by Mathieu,¹⁷ the objection to clips being their discomfort and the necessity of their removal several days later.

In the early cases in which repair was done in the manner described there was occasionally encountered a repair in which a small area of separation of the edges of the skin developed at the lower angle. This was overcome by passing the subcuticular suture at this point widely around the angle (fig. 11).

While inferences are not always accurate, the results of repairs following this technic have been gratifying. There has seemed to be much less discomfort to the patient, and no case of infection or "breaking down" of the perineum has been observed in the present series of more than 400 cases.

SUMMARY AND CONCLUSIONS

1. There has been a great increase in the frequency of the operation of episiotomy by the general practitioner.
2. Owing in a large measure to inadequate instruction of physicians, the end results of many such operations are disappointing.

16. Howes, E. L., and Harvey, S. C.: Tissue Response to Catgut Absorption, Silk, and Wound Healing; Correlation with Tensile Strength, *Internat. J. Med. & Surg.* 43: 225-230 (April) 1930.

17. Mathieu, Albert: Episiotomy, *West. J. Surg.* 40: 330-336 (June) 1932.

3. The technic described is simple, is easily acquired by interns and residents in an active hospital obstetric service¹⁸ and has seemed to possess certain advantages over other methods that I have employed.

304 Medical Arts Building.

THE NEED OF REDETERMINING SCHICK NEGATIVENESS IN SCHOOL CHILDREN

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AND

F. R. JANNEY, M.D.

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Diphtheria morbidity and mortality in the United States has been enviably low in the past ten years.¹ Furthermore, there has been, as pointed out by Jordan,² a naturally declining trend in diphtheria since 1895. The low incidence of clinical diphtheria makes it all the more important to maintain the Schick immunity of the large school population, since it has been shown by Dudley³ and others that the duration of the immunity depends a great deal on natural restimulation of the immune response by exposure to diphtheria environment. In the comparatively diphtheria free environment of American cities this restimulation of the immune response is absent, and therefore one might expect a relapse of immunity to occur more frequently.

During the years 1929 and 1930 we⁴ reported the successful use of toxoid as an immunizing agent in the preschool child. In a recent retesting of 145 of those children who had received toxoid and had shown a negative Schick test six or seven years previously, 22 per cent showed a reversion to a positive Schick test. Fraser and Halpern⁵ at the University of Toronto have recently called attention to a similar occurrence. One third of the children retested by them had lost their immunity within five years.

The recent report of Park⁶ suggests that a large number of reversions to a positive Schick test may be expected following one dose alum toxoid.

During the last year or two there has been an apparent increase in the incidence of diphtheria among supposedly Schick negative children. These occurrences warrant serious consideration of the present status of Schick immunity in our large school population.

As it is now the practice to immunize against diphtheria at about 9 months of age and to perform a Schick test within the following several months, many school children have had an interval of five years or more following the immunization procedure by the time they enter school.

The importance of a Schick test following the immunization procedure has been repeatedly empha-

18. The obstetric division of the Syracuse Memorial Hospital. From the Department of Preventive Medicine, Marquette University School of Medicine.

1. Diphtheria Mortality in Large Cities of the United States in 1936, *J. A. M. A.* 108: 2200 (June 26) 1937.

2. Jordan, E. O.: Some Unresolved Problems in Epidemiology, *Proc. Inst. Med. Chicago* 9: 185 (Dec.) 1932.

3. Dudley, S. F.; May, P. M., and O'Flynn, J. A.: Active Immunization Against Diphtheria, *M. Research Council, Special Report Series No.* 195, 1934.

4. Schwartz, A. B., and Janney, F. R.: The Comparative Value of Toxoid and Other Agents in the Immunization of the Preschool Child Against Diphtheria, *Am. J. Dis. Child.* 39: 504 (March) 1930.

5. Fraser, D. T., and Halpern, K. C.: The Antitoxic Response to Diphtheria Antigen in Children, *J. Immunology* 33: 323 (Oct.) 1937.

6. Park, W. H.: Duration of Immunity Against Diphtheria Achieved by Various Methods, *J. A. M. A.* 109: 1681 (Nov. 20) 1937.

sized. By means of the Schick test, varying degrees of effectiveness have been recorded for different materials; but, once a negative Schick test has been obtained, the immunity has been generally assumed to be permanent.

Whatever materials or method of immunization is followed, the immunity of the school child to diphtheria should be insured by either a routine Schick testing on all children entering school or by the administration of a routine dose of 1 cc. of toxoid at the time of entering school, as suggested by Fraser and Brandon.⁷

In order to maintain the low incidence of diphtheria in the United States, one of these two measures should be made a routine part of our preventive medicine program.

Clinical Notes, Suggestions and New Instruments

RHEUMATIC FEVER FOLLOWED BY MITRAL HEART DISEASE IN EACH OF IDENTICAL TWINS

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For many years the occurrence of simultaneous pathologic processes in homologous twins has aroused the curiosity of medical men. Recently it has been realized what interesting side lights such cases throw on both the etiology of disease and on genetics. Reports of such cases have been numerous in the literature. Many pairs of homologous twins have been born with identical developmental defects.¹ Others have almost simultaneously had various neoplastic diseases in middle or late life. Still others have had certain metabolic diseases, such as diabetes, within a few months of each other.² Other twins have had identical psychic disturbances varying from actual psychoses to similar alcoholic propensities.

It has been our privilege to observe mitral heart disease, following rheumatic fever, in each of identical twin girls. Since the case brings out some interesting points and since a survey of recent literature showed no similar case, we felt that it should be reported.

REPORT OF CASE

Annie F., a Slavish-American girl, aged 23, first consulted us Feb. 27, 1937. Her story was briefly as follows:

Six weeks before, her twin sister had died of "heart trouble." Ever since the death of her sister, the patient had feared that her heart also was affected. She had noticed precordial oppression, palpitation, and shortness of breath on slight exertion. These, she stated, were exactly the same symptoms which her sister had first noticed. The patient felt that her symptoms were probably due to an overwrought imagination, but she had decided to consult a doctor to still her fears. Feeling that she was highly distraught and that her symptoms were probably functional, we proceeded to examine her. She was rather slight and undernourished, evidently not in robust health. Surprisingly, examination of her heart, both by physical means and by the fluoroscope, did show typical signs of a far advanced rheumatic heart disease with well developed mitral stenosis.

Further delving into her history then brought out the following facts:

The twin girls, Annie and Mary F., were born Jan. 28, 1914. They were full term, healthy babies, and each is reported as weighing 7 pounds (3,175 Gm.). It was the mother's second pregnancy. Her first child died at 3 years of age of pneumonia. She had six subsequent pregnancies. All these children are alive and healthy. There were no other multiple pregnancies and, moreover, none were known on either side of the family.

The twins, as babies, were quite healthy and developed normally. The mother said that they were "always like as one"; that they were the same height and weight; that they talked alike and apparently even thought alike, as their reactions to a given situation were very similar. She stated that she could tell the girls apart from a front view but not from the back.

As is not surprising, the contagious diseases of childhood, measles, whooping cough and chickenpox, occurred simultaneously or nearly so.

At 15 years of age, Mary first acquired a cold and then multiarticular rheumatism, which began in her feet and ankles and migrated to her hands, wrists, elbows, shoulders and knees. The joints were swollen, red and acutely painful. She had a high fever and was quite ill. The attending physician made a diagnosis of rheumatic fever and told the mother at that time that the child's heart was affected.

Two weeks after the onset of Mary's illness, Annie developed the same train of symptoms. Her disease began in the same manner, starting in the feet and spreading to the other joints. The course was milder and she was not as ill as her sister at any time. The two girls remained in bed at home and recovered at the same time, getting up in about six weeks. The attending physician did not state whether or not Annie showed cardiac involvement. None of the other children were affected.

After recovering from this acute attack, both girls seemed well. They were active and were able to assist with the work of the home without discomfort. They never took part in gymnasium work at school because of the advice of their doctor.

About three years after the acute attack, Mary began to have marked shortness of breath on exertion. The attending doctor told the parents that she had rheumatic heart disease and advised rest and medication. The disease became progressively more and more severe and she died Jan. 13, 1937, of congestive heart failure.

In summary, two sisters, evidently identical twins, had rheumatic fever within two weeks of each other at 15 years of age. At 18 Mary began to show symptoms of congestive heart failure due to rheumatic heart disease. She died at 23, eight years after the primary attack of rheumatism. Now, just after the death of her sister, Annie shows signs of well developed mitral stenosis and is apparently on the verge of decompensation.

Dr. J. F. Machwart, who attended these girls during their early illness, has assured us that their first attack was typical rheumatic fever and that Mary had typical mitral stenosis before her death.

COMMENT

In such a case as the one presented, it is interesting to speculate why acute rheumatic fever should appear simultaneously in homologous twins and follow such a similar course in its progress to far advanced mitral heart disease. Identical twins probably develop from the two halves of a single fertilized ovum. They therefore should contain, as nearly as the vicissitudes of mitosis permit, exactly similar amounts of chromosome material. Therefore their hereditary potentialities of development, both anatomic and psychic, should be identical. The occurrence of similar developmental defects in each of homologous twins certainly suggests that the anlage of the malformation was present in the genes of the original fertilized ovum. Similar simultaneous and symmetrical development of neoplasms in homologous twins speaks for a definitely hereditary origin in the sense that the tumor must have had an original representation in the genes of the germ cell. Similarly, because of their occurrence in identical twins, it has been argued that the potentiality for developing certain metabolic diseases is a definite hereditary character and can be transmitted in a true mendelian ratio. None of these explanations, of course, fit our case. Rheumatic fever, while still not of proved etiology, is probably an infectious disease. It does not, however, have a high degree of infectiousness. It is definitely unusual for two children in the same family to be stricken with the disease at the same time, and that its course should be so similar certainly seems to suggest that there is a hereditary constitutional susceptibility which determines when

7. Fraser, D. T., and Brandon, K. F.: Duration of Schick Immunity, *Canad. Pub. Health J.* 27: 597 (Dec.) 1936.

1. McFarland, Joseph, and Meade, T. S.: The Genetic Origin of Tumors Supported by Their Simultaneous and Symmetrical Occurrence in Homologous Twins. *Am. J. M. Sc.* 154: 66 (July) 1932.

2. White, Priscilla; Joslin, E. P., and Pincus, Gregory: The Inheritance of Diabetes, *J. A. M. A.* 103: 105 (July 14) 1934.

even the infectious diseases shall be developed and guides their course along a predetermined path. This would be in agreement with Draper,³ who defines constitution as "that aggregate of hereditary characters, influenced more or less by environment, which determines the individual's reaction, successful or unsuccessful, to the stress of environment."

Although it is not apropos to the case being reported, we have recently made another interesting observation. In his excellent review of the diseases occurring in twins, McFarland¹ feels that the following generalization is justified: "Heterologous twins never suffer from identical malformations. Nor does one of homologous twins ever suffer from malformation not shared by its fellow." About six months ago we delivered a pair of heterologous twins, male and female, both of whom had bilateral clubbed feet. The clubbing of the two pairs of feet was identical in type, but the feet of the girl were less severely deformed and yielded to treatment more readily than those of the boy. It is difficult to explain such a case. It is hard to see how position in utero could account for similar and symmetrical clubbing of the two pairs of feet. Heterologous twins should have nothing more in common, from the strict point of view of heredity, than any other brother or sister from the same parents. Therefore if the malformations are on a strictly hereditary basis, they must have been an extremely rare coincidence. Other cases of similar malformations occurring in heterologous twins should be watched for, as they might throw light on this intriguing subject.

No attempt has been made to cover the theories of twinning or the laws of heredity covering this subject. For these, as well as for a complete bibliography, reference may be made to the large reviews of the subject.

CONCLUSIONS

A case of acute rheumatic fever developing to mitral heart disease in each of homologous twins would seem to present supportive evidence of a hereditary constitutional susceptibility to certain of the infectious diseases.

A case of similar malformation occurring in each of heterologous twins was observed.

4275 Pearl Road.

PROLONGED USE OF "MERCURIN" SUPPOSITORIES IN THE TREATMENT OF CHRONIC EDEMA

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The use of rectal suppositories for the administration of mercurial diuretics has been recognized as a simple and effective method of treating chronic edema of nonrenal origin.¹ There has been some doubt as to the advisability of this type of treatment, because of the possibility of severe local irritation.

Without giving details, Christian states that "this treatment may be kept up for months with no bad effects." Fulton noted no unfavorable reaction after the administration of fifteen "Mercurin" suppositories to a single patient.

Two cases are reported here. In each one "Mercurin" suppositories² were used for more than a year with good diuretic effect and no evidence of rectal irritation.

REPORT OF CASES

CASE 1.—A. L., an Italian-born white housewife, aged 35 on admission, had pleurisy and ascites when she was 11 years old, followed by dyspnea on exertion and chronic but variable swelling of the legs and abdomen. When admitted to the Presbyterian Hospital in 1932, physical examination showed a heart of normal size with normal heart sounds, a right-sided hydrothorax, an enlarged liver and spleen, ascites, and edema of the legs up to the thighs.

3. Draper, George: Human Constitution, Philadelphia, W. B. Saunders Company, 1924.

¹ From the Department of Medicine, Columbia University College of Physicians and Surgeons, and the Presbyterian Hospital.

1. Christian, H. A.: New England J. Med. 214: 418 (Feb. 27) 1936; Fulton, M. N.: ibid. 214: 1092 (May 28) 1936. Parkinson, John, and Thomson, W. A. R.: Lancet 1: 16 (Jan. 4) 1936. Thomson, W. A. R.: Quart. J. Med. 6: 321 (July) 1937.

2. The "Mercurin" suppositories used were provided by Campbell Products, Inc., of New York.

Laboratory examinations gave the following results: Hemoglobin was 62 per cent (Sahli); red blood corpuscles numbered 3,940,000 per cubic millimeter. The white blood cell count was normal. The urine was normal. The Wassermann reaction of the blood was negative. Serum protein was 4 per cent. The pleural fluid was a pale straw color; specific gravity was 1.010; cells were 210 per cubic millimeter, lymphocytes 96 per cent; a guinea pig injected with the fluid showed no tuberculosis at autopsy. The T waves in an electrocardiogram under low voltage were isoelectric in all leads.

The diagnosis was probable constrictive pericarditis (Pick's syndrome).

There was no progression of the symptoms until 1935, when weakness, dyspnea and swelling of the abdomen and legs became more pronounced. Study at that time showed hemoglobin 60 per cent, red blood corpuscles 5,600,000 per cubic millimeter, serum protein 5.2 per cent, serum albumin 3.2 per cent, serum globulin 2 per cent and venous pressure 150 mm. of water (direct method).

Following transfusion and large doses of iron the anemia disappeared and she felt much improved, though enlargement of the liver and dependent edema persisted. The possibility of pericardial surgery was discussed, but the patient declined to have such an operation.

In July 1936, because of some increase in ascites and dependent edema, she started treatment with mercurial diuretics, administered intravenously or by rectal suppository. In the subsequent seventeen months she had sixteen injections of "Mercurin"³ intravenously and fifty-five "Mercurin" suppositories.

She has been ambulatory on limited activity throughout this time. There has been symptomatic improvement, lasting several days, after each use of the mercurial diuretics. She has had no symptoms of rectal irritation, but she does have mild abdominal cramps after each dose of mercury, whether given intravenously or by rectum.

CASE 2.—R. C., a native-born Negress, aged 42 on admission, had acute rheumatic fever for two months at 24 years of age and was told that her heart was damaged. In spite of an active and strenuous life and four pregnancies, she had no cardiac symptoms. In October 1933, at the age of 39, she had a supravaginal hysterectomy because of pain and excessive bleeding from uterine fibromyomas. The heart was described as normal and the postoperative recovery was uneventful.

Two months after this operation she began to have precordial pain, dyspnea on exertion and swelling of the abdomen and legs. She was admitted to the Presbyterian Hospital in June 1935 because of steady progression of these symptoms. Physical examination revealed an enlarged heart, with a systolic murmur and a transitory pericardial friction rub at the apex, passive congestion of the lungs, small right-sided hydrothorax, liver enlarged to 4 cm. below the costal margin, moderate ascites and pitting edema of the legs and over the sacrum.

Laboratory examinations gave the following results: Hemoglobin was 80 per cent (Sahli); red blood corpuscles numbered 3,950,000, the white blood cell count was normal and the urine was normal. Serum protein was 5.5 per cent and serum nonprotein nitrogen 24 mg. per hundred cubic centimeters. The Wassermann reaction of the blood was negative. A teleroentgenogram of the heart revealed the total diameter to be 17 cm.; the internal diameter of the chest was 26 cm. In an electrocardiogram under low voltage, the T waves were inverted in all leads. The venous pressure was 240 mm. of water.

The diagnosis was active rheumatic myocarditis, possible constrictive pericarditis or disorder of the tricuspid valve.

The patient refused to consider a pericardial operation and she was not urged to do so because the large size of the heart revealed by x-ray examination seemed to make the diagnosis of constrictive pericarditis doubtful. Because of persistent ascites an abdominal paracentesis was done in December 1935 with the withdrawal of 6,000 cc. of clear fluid, which coagulated quickly. A guinea pig injected with this fluid showed no tuberculosis at autopsy.

Dyspnea, edema of the legs and ascites continued to be present in variable degree even though the patient's activity was greatly limited. In October 1936, because of increasing symptoms, the

3. Now called "Mercurin with Theophyllin."

administration of mercurial diuretics was begun. In the next thirteen months she received eighteen injections of "Mercurpurine" intravenously and thirty-five "Mercurin" suppositories. At no time did she have any symptoms of rectal irritation.

Her course was satisfactory until September 1937, when she discontinued her medication temporarily and had a great increase in the severity of her symptoms. Results obtained from further medication were not good, and she died in November.

Permission for postmortem examination was limited to the heart. The pericardial sac was large, but its surface was smooth and there were no adhesions to the wall of the chest or the pleura. The parietal pericardium was very thick, varying from 3 to 8 mm. in cross section, and was of a leathery consistency. The pericardial cavity was partially obliterated but contained more than 80 cc. of serosanguineous fluid. The heart itself was not enlarged. The mitral valve leaflets were thickened, but there was no stenosis of the valve. Microscopic examination revealed no evidence of active myocarditis or endocarditis, and the thick pericardium showed no evidence of any recent inflammatory process.

SUMMARY

Prolonged administration of mercurial diuretics by rectal suppository ("Mercurin") was given to two patients with no rectal disorder. Fifty-five were given to one patient and thirty-five to the other, without symptoms of rectal irritation.

622 West 168th Street.

THROMBO-ANGIITIS OBLITERANS IN SISTERS

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The rarity of thrombo-angiitis obliterans in women is revealed by the fact that a total of twenty-two case reports have appeared in the literature. We have recently had a very unusual experience in observing this disease in two sisters. To our knowledge this is the first observation of its kind. We are thus prompted to present the clinical histories.

REPORT OF CASES

CASE 1.—P. L., a Polish Jewess, aged 34, who came under observation on Sept. 4, 1937, had noticed five years before that walking produced an aching pain and cramps in her feet and legs. Her claudication became progressively worse, so that at the time of examination she was unable to walk more than one-half block. The pain was relieved only after a few minutes of rest. She also complained of cold feet and noticed their pale appearance. She had formerly been employed as an artificial flower worker but was compelled to give up her occupation because she experienced severe pain in the muscles of her left hand and arm during work. For the last six months she had had two painful ulcers, the size of a quarter (24 mm.), on the lower third of her right leg, and they had failed to heal in spite of a wide variety of therapeutic attempts. Former treatments consisted of intravenous injection of typhoid vaccine three times a week for four weeks, eight intravenous injections of hypertonic saline solution, suction and pressure treatments, diathermy and local application of ointments.

The patient had smoked three cigarets a day up to four years ago, when she was told to stop smoking because of her circulatory disturbance. She had not been observing any dietary restrictions, and rye bread was part of her regular intake.

Physical examination revealed that she was well nourished and well developed. The blood pressure was 120 systolic and 90 diastolic. She weighed 135 pounds (61 Kg.) and was 62 inches (157 cm.) tall.

Examination of her extremities showed a slight pallor of both feet in the recumbent position. They became cadaverous on elevation, and in the dependent position a marked cyanotic rubor developed. Both feet and legs were cold to the touch. The venous filling time was sixty seconds for both legs. Pal-

pable pulsations were absent from both dorsalis pedis, posterior tibial and popliteal arteries. The left radial and ulnar vessels were not palpable. The left hand was cold to the touch. The vessels of the right hand were palpable and the extremity was warm. The oscillometric readings are shown in table 1.

Cordlike veins were felt in both legs. The Wassermann reaction of the blood was negative. The blood count was

TABLE 1.—First Oscillometric Readings in Case 1

	Lower Extremities		Upper Extremities	
	Right	Left	Right	Left
Mid thigh	½	0		
Below knee.....	0	0	Below elbow....	3 ½
At ankle.....	0	0	Above elbow....	4 ½
Dorsalis pedis....	0	0		

TABLE 2.—Oscillometric Readings in Case 1 After Six Weeks

	Right	Left
Mid thigh	½	Trace
Below knee.....	½	Trace
At ankle	0	0
Dorsalis pedis	0	0

normal and urinalysis gave entirely negative results. The blood sugar content was 94 mg. per hundred cubic centimeters. X-ray examination of both legs and the left arm showed no signs of calcification. Examination of the eyegrounds gave negative results.

We have had an opportunity to observe two attacks of migrating phlebitis in the patient's left leg since she came under our care.

She was put to bed under a cradle baker with the heat maintained at 95 F. and was given intermittent venous occlusion at 30 mm. of pressure, starting with one minute on and two minutes off, continuously. She was also given twenty minutes of short wave treatment three times a week. Azochloramid ointment was applied locally to the ulcers, and the pain was relieved in three days. After one week of treatment the intermittent venous occlusion was reduced to eight hours a day. There was marked improvement in her walking ability, as indicated by the claudication time test. Although she could formerly walk only one-half block, she was now able to walk two and one-half blocks before experiencing a cramp. On October 18 the ulcers had completely closed over. Dr. Charles Goodman performed intradermal tests for rickettsia and found them positive with various dilutions. At the present time her feet are warm and sweaty. She has no pains when at rest. Her venous filling time is thirty seconds in her right foot and thirty-five seconds in her left foot. The cadaverous color has disappeared. Her oscillometric readings taken six weeks after the institution of treatment are shown in table 2.

CASE 2.—Mrs. S. M., aged 40, a sister of Mrs. P. L., has had intermittent claudication for the past fourteen years. It was originally present in the muscles of the right foot and has

TABLE 3.—Oscillometric Readings in Case 2

	Lower Extremities	
	Right	Left
Mid thigh	3 ½	3
Below knee.....	3	2
At ankle.....	½	½
Dorsalis pedis....	¼	0

recently progressed to the muscles of the calf. For the past four years she has had numbness and coldness in the toes of the left foot. At present she has pain when at rest and burning pain and a sensation of pins and needles in all of her toes. Unlike her sister, she has no history of migrating phlebitis.

She had typhus fever as a child. She has never smoked, she uses rye bread in her diet and she does not consume any alcoholic drinks. She is married and has two normal sons.

Physical examination revealed that she was well nourished and well developed. The blood pressure was 130 systolic and 90 diastolic. She weighed 126 pounds (57 Kg.), and she was 60 inches (152 cm.) tall. Her heart was normal. Examination of the eyegrounds did not show any vascular changes. Examination of the urine gave entirely negative results.

All of her toes had a cadaverous appearance. The arterial pulsation of the dorsalis pedis was felt in the right foot and was absent in the left foot. When she elevated her legs the plantar surfaces became blanched, the left more than the right, and she complained of an aching cramp in the toes of her left foot. The venous filling time was fifteen seconds in the right and twenty-five seconds in the left foot. X-ray examination failed to disclose any evidence of calcification of the arteries of the legs and the feet. However, a phlebolith was seen in one of the veins of the calf. The intradermal test for rickettsia was markedly positive with all dilutions. Oscillometric readings for both legs are shown in table 3.

These signs clearly indicated evidence of arterial impairment of thrombo-angiitis obliterans.

COMMENT

It would appear that these two cases present sufficient clinical evidence and all the criteria necessary to establish the diagnosis of thrombo-angiitis obliterans. There was a history of progressive intermittent claudication, coldness and paresthesias of the feet and toes, impairment in circulation as indicated by reduced oscillometric readings, absence of palpable pulsations, prolongation of the venous filling time, confirmatory plethysmographic studies and failure of ulcers to heal. The pathognomonic sign of migrating phlebitis was present in one case. The absence of calcification, the normal blood pressure, the negative serologic tests and the absence of any evidence of diabetes tend to rule out other possible causes of the occlusive arterial disease.

Smoking apparently had little to do with the onset or progress of the disease in either of these cases. One patient had smoked only moderately up to the time of onset of her symptoms, and the disease progressed in spite of cessation of this habit. The sister had never smoked at all.

1908 Avenue K—123 Eighth Avenue.

HAND INJURIES DUE TO INJECTION OF OIL AT HIGH PRESSURES

DONALD E. DIAL, M.D., CLEVELAND

Rees¹ has called attention to the absence of reports of injuries resulting from the injection into the tissues of oil under high pressure, such as may occur in working with Diesel engines. In these engines the fuel is forced through fine jets at pressures as high as 6,000 pounds per square inch in order to produce finely divided particles for rapid combustion. At such pressures the fine spray may penetrate the skin and cause injury to the subcutaneous tissues. In the case reported by Rees the accident resulted, in twenty-four hours, in intense pain and marked swelling of the affected finger and the hand. Gangrene of the finger followed and amputation through the metacarpal bone became necessary. The cases to be reported here were similar in several respects; namely, the severe pain, the gangrene and the sterile necrosis involving the skin and especially the subcutaneous tissues.

REPORT OF CASES

CASE 1.²—An engineer brought the tip of his index finger in contact with a fine jet of oil coming from a Diesel engine injector under high pressure. The finger immediately ballooned out like a sausage, and the patient milked oil out of the little puncture in the end of his finger. He was seen immediately after the accident, but nothing showed objectively except moderate swelling of the finger and a punctate wound at the tip of the distal phalanx. That night more swelling developed, with intense pain in the finger. Still later the swelling increased, with a somewhat livid discoloration of the whole finger. The

patient was hospitalized and deep linear incisions were made on both lateral aspects of the phalanges.

The end result was that the entire distal phalanx became necrotic and was amputated; also the flexor profundus tendon sloughed. A peculiar condition developed in that for weeks after the amputation small pieces of wax kept being extruded from the stump.

The patient has a moderately useful finger but some circulatory impairment has persisted.

CASE 2.—An engineer, aged 44, while testing the fuel injectors of a Diesel engine, inadvertently put his hand in front of the injector and the spray struck the volar surface of the left index finger. When he was seen less than an hour later there was very little swelling and the color of the finger was not abnormal. There were three minute puncture wounds on the volar surface of the distal phalanx but no bleeding. There was moderate pain. The distal end of the finger was blocked with procaine hydrochloride and two parallel longitudinal incisions were made over the volar surface, a sterile dressing was applied and the patient was allowed to go home. Seven hours later the pain was so severe that one-fourth grain (0.015 Gm.) of morphine was given, with partial relief. Twenty-four hours after the injury the pain had diminished but was still severe. The color of the finger was satisfactory. There was very little drainage. A hot magnesium sulfate soak was given and the patient was instructed to repeat this treatment at four hour intervals at home. Forty-eight hours after the injury there was a bluish discoloration of the pulp of the finger and of the subungual tissue. There was less pain than before. Sensation to pinprick on the volar surface was diminished. The picture was that of incipient gangrene. Oscillometric readings showed a definite decrease in the ulnar and radial pulses as compared with those of the uninjured hand. The patient was therefore hospitalized at once and positive-negative pressure treatments (passive vascular exercise) were given for three hours twice a day. The finger became more comfortable with this treatment and the temperature, which was never more than 38 C. (100.4 F.), became normal in two days. The color of the finger also improved, but only temporarily. On the eleventh day after the injury the finger tip was again discolored and, although there was no pain or elevation of temperature, there was definite fluctuation. A fish-mouth incision was made, therefore, liberating a small amount of purulent material which showed no growth on culture. The subcutaneous tissue was gray and necrotic. Bare bone was not exposed. Hot moist dressings were applied for several days and after two days, when a negative culture was reported, the passive vascular exercise treatments were resumed. After the incision and drainage the general color of the finger improved, but the small area of skin between this incision and the one made on the day of the injury became gangrenous and was removed. The wound slowly filled in and was healed in two months from the onset. The passive vascular exercise treatments were continued until discharge from the hospital a month after admission.

Examinations of the blood and urine showed nothing unusual. A roentgenogram of the finger on the fifth day of the disease showed no evidence of pathologic changes of the bone.

This patient also has a useful finger, although there is almost no motion in the distal interphalangeal joint.

An attempt was made to determine the nature of this type of injury by injecting small amounts of the fuel oil beneath the skin of a rabbit's ear. Injections of oil varying in amount from 1 minim (0.06 cc.) to 1 cc. were made. In each case a sterile abscess formed without the local heat and redness usually associated with infections. It is assumed that the oil is in itself toxic, producing a reaction similar to that caused by turpentine.

The logical treatment, as suggested by Rees, would seem to be early and liberal incision. In case 1 the incision was probably delayed too long. In case 2 incision was done early but was perhaps not adequate in extent. The value of passive vascular exercise is hard to determine, though it seemed to be of some value in this instance. It deserves trial on the basis of the associated arteritis or arterial spasm which was shown to be present in one case.

The Lorain Avenue Clinic.

1. Rees, G. E.: Penetration of Tissue by Fuel Oil Under High Pressure from Diesel Engine, J. A. M. A. 109: 866 (Sept. 11) 1937.

2. Dr. George Gilpin permitted me to report his case (case 1) with mine.

DERMATITIS FROM THE USE OF DRY SHAVERS

HAROLD SHELLOW, M.D., CHICAGO

In recent years dry shaving methods have been widely popularized and in many instances they have been adopted to minimize the amount of irritation of the skin. It is my purpose to report three cases of dermatitis resulting from the use of dry shavers. Since this paper was written, four additional cases have come to my attention.

REPORT OF CASES

CASE 1.—A young man who had been using a round-head type of dry shaver for a month noticed an eruption on his face. This started with a burning and redness of the skin, which came on several days after he had used the new method of shaving. At first the reaction lasted for a few hours but, with continued use of the implement, the rather transient inflammation gave way to a permanent redness and scaling around the hairs. He stated that he had used the shaver over and over again in order to obtain a shave as close as he had accomplished with the ordinary variety of razor.

He had a pinhead to small pea sized erythematopapular eruption, in the main about the hair follicles but also present interfollicularly. Fine scaling accompanied the eruption and a few scattered pustules were seen. The lesions were distributed over the bearded areas of the cheeks and the sides of the chin and in small patches on the upper front part of the neck.

In four days after an ordinary razor was substituted and a bland lotion prescribed, the eruption began to fade; no pustules were seen and six days later, except for a faint reddish tinge, the skin was normal. Two weeks after the dermatitis disappeared, on resumption of shaving with the electric razor, burning, tingling and redness came on, followed in two days by duplication of the former condition. No after-shaving lotion had been used. Patch tests with the razor head and soap were negative.

CASE 2.—A man, aged 22, who had had a clear skin until about a week after he started using a dry shaver (flat-head type), complained of a transient burning and redness of the face which was followed by an eruption. An ordinary face soap had been used and, except for talcum powder, no after-shaving preparation had been applied. The eruption involved the bearded areas of the face and consisted of erythematous papules ranging from the size of a pinhead to slightly larger. These coalesced to produce irregular patches with small islands of normal skin intervening. In the follicular areas the papules were of a deeper reddish hue and occasional pustules and crusts were seen.

With discontinuance of the dry shaver, the substitution of an ordinary razor and the use of bland medication, all subjective symptoms vanished in three days, and in two weeks the skin was back to normal. Seen again a month later, the patient stated that he had tried the electric razor for a few days in succession but had experienced burning and redness of the skin and had been compelled to stop using the shaver.

CASE 3.—A young woman complained of a rash on her legs which was accompanied by burning and itching. The day before the eruption appeared she had used a dry shaver to remove the hair on her legs. She readily admitted that she went over the skin time and again in order to remove the short stubbles of hair. The eruption consisted of pinpoint to pinhead sized maculopapules of bright red hue, hemorrhagic in nature. It involved the anterior, medial and lateral aspects of the lower extremities from below the knees to about the lowest one third of the legs.

Three days after the first appearance of the eruption the follicular lesions became darkly crusted, and a week later only residual redness remained. Six weeks later she again used a dry shaver, this time a different variety, but the following day the skin broke out as it had before. Patch tests with the shaving heads were negative.

COMMENT

In the presence of an eruption, the dry shaving method has often been usefully employed to reduce the amount of irritation of the skin. Under normal conditions two factors are offered

as an explanation of the dermatitis: First, the lack of preparation that accompanies the use of the dry shaver may lead to neglect of washing the skin, thereby increasing the likelihood of infection. Second, and conceivably the essential one, there is traumatization, which results from the desire to obtain as close a shave with the dry shaver as with the ordinary razor. Observations have shown that this is almost impossible to achieve but, in an attempt to do so there is a tendency to cause constant manipulation or overuse of the device, as illustrated by the cases here reported. The vigorous application leads to trauma by virtue of the fact that the head of the shaver is "massaged" on the skin, thereby producing irritation, which leads to the dermatitis.

These cases are few in number, but with the multitude of users it must follow that many cases similar to these have and will occur, and this may serve as a means of calling attention to the possible source of cutaneous manifestations that the dry shaving method may produce.

185 North Wabash Avenue.

Special Article

THE CHEMISTRY OF VITAMIN A
AND SUBSTANCES HAVING
A VITAMIN A EFFECT

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ST. PAUL

This article and others recently published or to be published comprise a new series on the present status of our knowledge of the vitamins. They have been prepared under the general auspices of the Council on Pharmacy and Chemistry and the Council on Foods. The opinions expressed are those of the authors and not necessarily the opinions of either council. Reprints are not available but the articles will be published later in book form.—Ed.

Shortly before the late Dr. Lafayette B. Mendel wrote an article on vitamin A for the previous vitamin symposium in *THE JOURNAL*, the perplexing question as to why the yellow-red plant pigment carotene exhibits vitamin A activity although the familiar vitamin A of liver oils is essentially a colorless substance had been answered by the discovery¹ that carotene is convertible in the body to vitamin A. In fact the chemical basis for such a relationship had just been established by the brilliant researches of Karrer and his associates, who had determined the chemical constitution both of plant carotene² and also of vitamin A³ from fish liver oil.

The first complete structural formula for carotene (fig. 1) has since turned out to be that of β -carotene, which is by far the most important and widely distributed of the known coloring matters which have vitamin A activity.

β -carotene is a nitrogen-free, aliphatic, methylated polyene having two identical, unsaturated, methylated terminal rings. (The term polyene is given to compounds having a series of conjugated double bonds.)

1. Moore, Thomas: Vitamin A and Carotene: V. The Absence of the Liver Oil Vitamin A from Carotene; VI. The Conversion of Carotene to Vitamin A in Vivo, *Biochem. J.* 24: 696 (No. 3) 1930; The Distribution of Vitamin A and Carotene in the Body of the Rat, *ibid.* 25: 275 (No. 1) 1931.

2. Karrer, P.; Helfenstein, A.; Wehrli, H., and Wettstein, A.: Pflanzenfarbstoffe: XXV. Ueber die Konstitution des Lycopens und Carotins, *Helv. chim. Acta* 12: 1084, 1930.

3. Karrer, P.; Mori, R., and Schöpp, K.: Zur Kenntnis des Vitamins A aus Fischtranen II. *Helv. chim. Acta* 14: 1431, 1931.

When the aliphatic central chain is examined more closely it may be considered as a condensed chain of four dehydrated isoprene (β -methylbutadiene) residues, shown in the diagram between the broken vertical lines. It will also be noted that these isoprene residues are arranged in pairs, which are united in reverse order at the carbons 15, 15'.

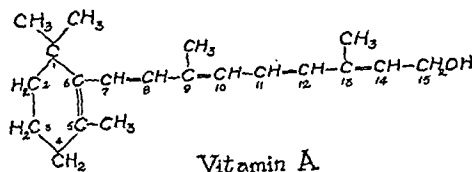
The discovery of this fact by Karrer and his associates is important to an understanding of the relation of carotene to vitamin A because the double bond uniting the two pairs of reversed isoprene residues is evidently capable of hydrolysis giving rise to an alcoholic group in each of the split products. This is the only known basis for the formation of vitamin A from those carotenoids which, in addition to the same polyene chain, also possess, at one or both ends of the structure, the same rings possessed by β -carotene.

In keeping with these facts, Karrer and his associates proposed the structure for vitamin A shown in figure 2, which is now generally accepted.

The ring structure in both β -carotene and vitamin A proved to be of great importance for establishing the structural and the chemical relationships of these substances. The ingenious researches of Karrer were the first to prove that β -carotene contains two β -ionone rings, β -ionone having the structure shown in figure 3.

When this structure was demonstrated in carotene it was relatively easy to demonstrate its occurrence in a highly purified vitamin A preparation from fish liver

α -carotene has one β -ring and one optically active α -ring; γ -carotene has only one ring, a β -ring, the other potential ring being open, and cryptoxanthin has one β -ring and one β -oxidized ring. γ -carotene, being a monocyclic compound, is related both to carotene and to lycopene, the familiar red tomato pigment, which is a noncyclic hydrocarbon having both potential β -ionone



Vitamin A

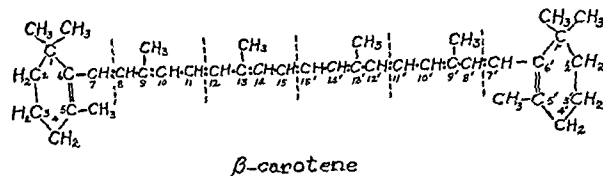
Fig. 2.—Structure of vitamin A.

rings open. As previously stated, β -carotene is much the most important of the four known vitamin A precursors, α -carotene and, especially, γ -carotene and cryptoxanthin having a limited distribution in the natural foodstuffs of man and animals.

In several of the best known and most widely distributed carotenoids, one or both of the terminal rings have one or more alcohol ($=\text{CHOH}$) groups, as already mentioned for cryptoxanthin, or they may have one or more ketone ($=\text{CO}$) groups. Astacin (astacene), the familiar red pigment of lobster and salmon, is a tetraketone- β -carotene. It is a curious fact, however, that the part of a carotenoid molecule possessing the α -ionone ring or its alcohol or ketone derivatives or containing the alcohol or ketone derivatives of the β -ionone ring is not convertible in vivo to vitamin A. As carotenoids which have no ring structure, such as lycopene, capsorubin (capsorubene), bixin (bixene) and crocetin (crocetene), have no vitamin A activity, as is the case for one-half the molecule of γ -carotene, previously referred to, it is concluded that the intact β -ionone ring is an essential component of the vitamin A molecular structure. It is further concluded that each molecule of β -carotene is capable of giving rise to two molecules of vitamin A, while α -carotene, γ -carotene and cryptoxanthin may give rise to only one vitamin A molecule. It is further concluded that no other carotenoid⁸ whose structure has been determined is a potential vitamin A precursor.

The carotenoids possessing alcohol-containing or ketone-containing ionone rings are much more abundant in nature than are the carotenes. Several of these carotenoids were formerly classed together under the general term xanthophyll because of their characteristic yellow color. Of the many xanthophylls (?) now known, only one is still called xanthophyll, more specifically plant xanthophyll (sometimes called lutein); it is a dioxy- α , β -carotene. Earlier reports of vitamin A activity of crystalline plant xanthophyll were not confirmed and would not have been expected to be confirmed had the chemical relationships been established between the carotenes and vitamin A.

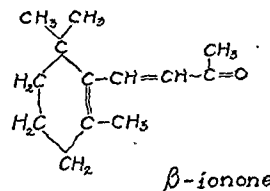
Most of the pigments formerly classed as xanthophylls now carry a specific name ending in -xanthin, such as zeaxanthin, the dominant pigment of yellow corn, also

 β -caroteneFig. 1.—Structure of β -carotene.

oil. Soon Heilbron, Morton and Webster⁴ were able to substantiate Karrer's formula by forming a naphthalene compound from vitamin A which one could account for only by assuming the correctness of Karrer's formula. Also, Karrer⁵ himself completed the proof by an eight step synthesis of crystalline perhydrovitamin A (the completely hydrogenated derivative of the highly unsaturated compound), beginning with β -ionone and proving its complete chemical identity with the similarly crystalline hydrogenated natural vitamin from fish liver oil.

The final step in this chemical story is the synthesis of the pure vitamin in vitro. Recent reports⁶ indicate that this has been accomplished. The isolation of the crystalline natural vitamin has also been reported.⁷

The ring structure in vitamin A is of great biochemical importance. Not only does it play an as yet undetermined role in the biologic activity of the vitamin but it has also been demonstrated that of the thirty or more carotenoids whose chemical structure now seems well established only four may be converted in vivo to vitamin A; likewise, only these possess the optically inactive β -ionone ring. Of these four vitamin A precursors only β -carotene has two such rings;

 β -iononeFig. 3.—Structure of the β -ionone ring.

4. Heilbron, I. M.; Morton, R. A., and Webster, E. T.: The Structure of Vitamin A, *Biochem. J.* **26**: 1194 (No. 4) 1932.

5. Karrer, P.; Morf, R., and Schöpp, K.: Synthese des Perhydrovitamins A, *Helv. chim. Acta* **16**: 557, 1933.

6. Fuson, R. C., and Christ, R. E.: The Condensation of β -Cycloltrial with Dimethylacrolein, *Science* **84**: 294 (Sept. 25) 1936. Kuhn, R., and Morris, C. J. O. R.: *Ber. d. Deutsch. chem. Gesellsch.* **70B**: 853, 1937.

7. Holmes, H. N., and Corbet, Ruth E.: A Crystalline Vitamin A Concentrate, *Science* **85**: 103 (Jan. 22) 1937.

8. A possible exception is echinenone, a carotenoid from the sea urchin (Lederer, E., and Moore, T.: Echinenone as a Provitamin A, *Nature* **137**: 996 [June 13] 1936).

found in green leaves; capxanthin, the dominant pigment of the red peppers, paprika and pimento; fucoxanthin, the dominant pigment of the so-called brown algae; flavoxanthin, the buttercup pigment; violaxanthin, from the yellow pansy, and taraxanthin, from the dandelion.

Table 1 shows some of the more important carotenoids, their chief occurrence in nature and their relation to vitamin A.

The aliphatic primary alcohol structure of vitamin A is important also in connection with its biochemical properties. It allows for esterification and therefore for compounds of vitamin A with fat acids, proteins and bile acids, which would not be possible for any of the known carotenoid precursors of the vitamin except cryptoxanthin, which, as already stated, has an alcohol group on one of its ionone rings. The alcohol groups on the ionone rings are also capable of ester formation;

TABLE 1.—A Partial List of Carotenoids, Their Important Sources and Their Relation to Vitamin A*

Name	Sources	Molecules of Vitamin A Possible from One Molecule of Pigment
α -carotene.....	Red palm oil, chestnuts, carrot root, mountain ash berries.....	1
β -carotene.....	Green leaves, carrot root, red palm oil, butter.....	2
γ -carotene.....	Fruits of <i>Gonocaryum pyriforme</i> (a Dutch East Indies plant), leaves of lily-of-the-valley.....	1
Cryptoxanthin.....	Red calix and fruit of the Chinese lantern plant, yellow corn, egg yolk, green grass.....	1
Xanthophyll (luteln)	Green leaves and grass.....	0
Zeaxanthin.....	Yellow corn, green leaves, egg yolk....	0
Rhodoxanthin.....	Seed coat of the yew.....	0
Astacin.....	Lobster, salmon, shrimp.....	0
Lycopene.....	Red tomato, watermelon.....	0
Capxanthin.....	Red peppers, paprika, pimento.....	0
Fucoxanthin.....	Brown algae.....	..
Taraxanthin.....	Dandelion, sunflower, cocksbur.....	0
Violaxanthin.....	Yellow pansy.....	0
Flavoxanthin.....	Buttercup.....	0

* The carotenoids mentioned are not necessarily the exclusive cause of the pigmentation of the products mentioned. In most cases they are not. Of the vitamin A active products, red palm oil and carrots contain chiefly β -carotene and α -carotene and butter chiefly β -carotene, and of the carotenoids in green leaves, β -carotene is found almost exclusively, although xanthophyll and zeaxanthin are the dominant carotenoids.

in fact, the carotenoids which possess such structures apparently exist in nature as esters rather than as free pigment. Various fat acid esters of vitamin A have been described, and there is evidence to indicate that the vitamin is absorbed as bile acid compound,⁹ transported in the blood and lymph as fat-acid ester¹⁰ and stored in the liver as a similar compound.¹¹ This suggests that the vitamin performs its biochemical function in chemical combination with other substances rather than as free substance. Support for this theory

9. According to J. D. Greaves and C. L. A. Schmidt (Relation of Certain Bile Acids to Absorption of β -Carotene in the Rat, *Proc. Soc. Exper. Biol. & Med.* **36**: 434 [May 1937], carotene cannot form compounds with bile acids, although the bile is essential for the absorption of the provitamin (The Utilization of Carotene by Jaundiced and Phosphorus Treated Vitamin A Deficient Rats, *Am. J. Physiol.* **111**: 502 [April 1935]). See also von Euler, Hans, and Klusmann, Ericka: Zur Biochemie der Carotinoide und des Vitamins C (Ascorbinsäure), *Ztschr. f. physiol. Chem.* **219**: 215 (Aug.) 1933.

10. Drummond, J. C.; Bell, Muriel E., and Palmer, Elizabeth T.: Observations on the Absorption of Carotene and Vitamin A, *Brit. M. J.* **1**: 1208 (June 15) 1935.

11. Reti, Ladislav: Contribuciones al estudio bioquímico de la vitamina A: I. Sobre el estado de combinación de la vitamina A en las aceites de hígado, *Rev. Soc. argent. de biol.* **11**: 283 (July) 1935; Sur l'état de combinaison de la vitamine A dans les huiles de foie, *Compt. rend. Soc. de biol.* **120**: 577 (No. 33) 1935.

is found in the experiments of Wald,¹² which point to a close chemical relationship between the visual purple (rhodopsin) of the retina and a protein-vitamin A compound, which offers a chemical explanation for the well known importance of vitamin A in certain of the visual processes, including its role in the correction of idiopathic hemeralopia.

Vitamin A compounds are decomposed, with the liberation of the vitamin, by such hydrolytic processes as occur in saponification, although the vitamin, being an alcohol, is not itself saponifiable. Most of the carotenoids, as their structure indicates, are also non-saponifiable. Therefore the vitamin A precursors, together with any vitamin A, appear in the non-saponifiable extracts of fats and oils that contain them. This is the basis of the manufacture of the so-called cod liver oil "concentrates." Because of its alcoholic nature, vitamin A may be separated from its carotenoid precursors by the "phase-separation" test, by which a petroleum ether (low boiling) solution of the mixed products is shaken with 80 to 90 per cent methyl alcohol. The alcohol will extract the vitamin A from the immiscible upper layer of petroleum ether, leaving behind all its carotenoid precursors.

Consideration must be given the possible importance of the unsaturated bonds in vitamin A. Four of these are present in the aliphatic side chain and one in the ionone ring. Perhydrovitamin A and perhydro- β -carotene, which are completely hydrogenated substances, have no biologic activity, but both α -dihydrocarotene and β -dihydrocarotene are active,¹³ as is also di-iodo-carotene. The double bonds eliminated when the last-named by-product is formed are solely in the side chain. However, it is not entirely clear whether the relation of unsaturation to physiologic activity resides solely in the β -ionone ring or whether some unsaturation in the side chain is also important. It is certain of course that the side chain unsaturation explains for the most part the probable function of vitamin A as oxidation reduction catalyst, also possessed by the carotenoids. The unsaturated bonds explain the action of both vitamin A and its precursors as hydrogen acceptors, and experimental evidence has shown that the substances readily absorb oxygen in solution and are markedly pro-oxygenic when undergoing oxidation. Highly oxidized carotenes and vitamin A have no biologic activity, a fact of great importance in the preservation of the vitamin A activity of foods and medicinal products. Hydroxyphenolic compounds, such as hydroquinone and vitamin E, exert some protective action against the oxidation of carotenes and vitamin A. Vitamin A and its precursors are stable to the usual cooking and heat-processing procedures provided they are protected against oxidation.

Vitamin A and its precursors exhibit characteristic differences in their affinity toward various adsorbents, such as calcium carbonate and alumina (aluminum oxide). When a petroleum ether solution of the mixture is filtered through a tightly packed column of finely powdered aluminum oxide, the order of decreasing adsorption affinity will be γ -carotene > cryptoxanthin > β -carotene > α -carotene > vitamin A. This property has been very useful in the isolation and study of the carotenoid precursors of vitamin A.

12. Wald, George: Carotenoids and the Visual Cycle, *J. Gen. Physiol.* **10**: 351 (Nov. 20) 1935.

13. von Euler, H.; Karrer, P.; Hellström, H., and Rydberg, M.: Die Zuwachswirkung des isomeren Carotins und ihrer ersten Hydrierungsprodukte, *Helv. chim. Acta* **14**: 839, 1931.

Each of the vitamin A active carotenoids shows characteristic absorption bands in the visible (blue and violet) region of the spectrum. The exact position of these bands depends on the index of refraction of the solvent employed, and their intensity depends on the molar concentration of carotenoid in the layer through which the light passes. Spectroscopic absorptions of much less intensity occur in the ultraviolet, which may be detected by photographic methods. The wavelengths of maximum absorption of the two most prominent visible bands of the vitamin A active carotenoids in carbon disulfide solution are shown in table 2.

Vitamin A differs from its precursors in showing no absorption bands in the visible region of the spectrum. Instead it shows a rather broad absorption region in the ultraviolet, with a definite maximum at 328 millimicrons in chloroform. These spectroscopic properties form the basis for the spectrophotometric methods for the quantitative estimation of vitamin A and its precursors.

All substances having the polyene structure give color reactions with numerous reagents, most of which are either strong acids or chlorides of polyvalent metals. The intense blue reaction with antimony trichloride given by the carotenes and the blue-violet color given with the same compound by vitamin A have been studied extensively. They serve to reveal the presence of vitamin A and its precursors in animal tissues and products and form the basis of carefully developed quantitative colorimetric methods, especially for preliminary assays of cod liver and other fish liver oils rich in vitamin A, and for exploratory research in the physiology of the vitamin.

The spectroscopic properties and color reactions mentioned will no doubt be discussed in greater detail in another paper in this series dealing with methods of assay.

Although the chemical and physiologic relations between vitamin A and its precursor carotenoids have been well established, the conversion of the latter to the former has not yet been accomplished by chemical procedures. All evidence points to the liver as the site of the formation of vitamin A in animals, presumably by means of an enzyme, which has been called carotenase. Earlier reports¹⁴ of demonstration of this action in vitro have not been confirmed. It is clearly unnecessary for man or animals to make this conversion when vitamin A is provided per se in the diet. Indeed, question has been raised as to whether all species¹⁵ are able to form vitamin A from carotene. Marked differences between species no doubt occur with respect to the efficiency of conversion of carotene to vitamin A. It is known that considerable of the ingested carotene occurs in the blood and is deposited in adipose tissue in man, the cow and the horse; in the cow, for which the problem has been studied, a relatively small proportion¹⁶ of ingested carotene is absorbed and converted into vitamin A. Some breeds, such as the Guernsey, convert a smaller proportion of absorbed pigment than others, thus accounting for the larger proportion of

carotene than of true vitamin A in their milk fat in contrast to Holstein milk fat, which is lower in carotene but richer in true vitamin A.

Although color is one of the outstanding properties of the vitamin A precursors, in contrast to the essentially colorless vitamin A, some common human foods of animal origin which are not vitamin A precursors are often highly pigmented with carotenoids. For example, the yolk of hen eggs is normally poor in carotene but rich in zeaxanthin and xanthophyll. Normally it contains also vitamin A itself, owing to its formation in the fowl from the vitamin A precursors absorbed from the ration, as well as to the practice of adding fish liver oil to the ration. The carotenoid precursors of the vitamin occurring in egg consist largely of cryptoxanthin,¹⁷ especially when the hen is fed heavily on yellow corn or grass.

There is much more relation between color and potential vitamin A activity of the common vegetable foods consumed by man than between color and vitamin A activity of animal tissues or products of animal metabolism. Green and yellow (or orange) are the color indicators of potential vitamin A in plants, the former because carotenes always accompany the green chlorophylls. Natural yellow color may be a rough qualitative guide for selection of vitamin A active

TABLE 2.—Wavelengths of Maximum Absorption of Carotenoids

Carotenoid	Absorption, Mm.	Maximum, Mm.
γ -carotene.....	533.3	496.0
β -carotene.....	521.0	485.0
Cryptoxanthin.....	518.0	483.0
α -carotene.....	509.0	477.0

animal products, because it indicates the consumption of carotenoids and vitamin A precursors by animals even though the carotenoid which colors the product is not a vitamin A precursor. However, all fatty animal products are apt to contain some vitamin A itself if the animal is a transformer of carotene to vitamin A, regardless of the color of the product; some products may be exceptionally rich in true vitamin A and relatively poor in pigment. Certain of the fish liver oils have this characteristic, notably that of the halibut and the burbot.

In connection with any consideration of the relation between color (carotenoid) and vitamin A activity it should be remembered that vitamin A is the only vitamin so far discovered which is a product solely of animal metabolism from precursors which are metabolic products only of plants. This should not be lost sight of in spite of the fact that pure β -carotene is the international vitamin A standard, 1 international unit being the growth-promoting activity in rats of 0.0006 mg. of the standard β -carotene.

For a much more extensive discussion of the chemistry of vitamin A and the substances having the effect of vitamin A than is possible in this article the reader is referred to the extensive paper by Karrer and Wehrli¹⁸ and the monograph of Zechmeister.¹⁹

14. Olcott, H. S., and McCann, D. C.: Carotenase: The Transformation of Carotene to Vitamin A in Vitro, *Science* **74**: 414 (Oct. 23) 1931; The Transformation of Carotene to Vitamin A in Vitro, *J. Biol. Chem.* **94**: 185 (Nov.) 1931.

15. J. L. Rea and J. C. Drummond (Ueber die Bildung von Vitamin A aus Carotin im tierischen Organismus, *Ztschr. f. Vitaminforsch.* **1**: 177, 1932) obtained evidence that this is not possible in cats.

16. Bowman, C. A.; Steenbock, Harry; Beeson, W. M., and Rupel, I. W.: Fat-Soluble Vitamins: XXXIX. The Influence of Breed and Diet of Cows on the Carotene and Vitamin A Content of Butter, *J. Biol. Chem.* **105**: 167 (April) 1934.

17. Gillam, A. E., and Heilbron, I. M.: Vitamin A-Active Substances in Egg-Yolk, *Biochem. J.* **29**: 1064 (No. 5) 1935.

18. Karrer, P., and Wehrli, H.: 25 Jahre Vitamin-A-Forschung *Nova Acta Leopoldina*, N. S. **1**: 175, 1933.

19. Zechmeister, L.: Carotinoide, Berlin, Julius Springer, 1934; Lipochrom und Vitamin A, in Schönfeld, H.: *Chemie und Technologie der Fette und Fettprodukte*, Vienna, Julius Springer, 1936, vol. 1, p. 147.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.

HOWARD A. CARTER, Secretary.

PEERLESS ULTRA SHORT WAVE UNIT, MODEL UW2M, ACCEPTABLE

Manufacturer: Peerless Laboratories, Inc., 115 East Twenty-Third Street, New York.

The Peerless Ultra Short Wave Diathermy, Model UW2M, is recommended for medical and surgical use. According to the firm, it has the same circuit and same identical electrical characteristics as the accepted Peerless Unit, Model UW2A (described in THE JOURNAL, Feb. 20, 1937, p. 639) except for the fact that the number of input control steps has been changed from five to nine and that the style of the cabinet has been altered.

The unit is equipped with terminal outlets to permit the use of inductance cable, air-spaced treatment arms, cuff electrodes, metal orificial electrodes and electrosurgical accessories for cutting and coagulation. The electrical design permits the use of all these modalities from one pair of terminals with no switching devices being used.

The wavelength is approximately 6 meters in this two-tube machine, which utilizes a self-excited, push-pull oscillator circuit. The patient's circuit is inductively and capacitatively coupled to the oscillator circuit. Tuning of the patient's circuit is accomplished with a double condenser with plates moving parallel, which tune the two branches of the patient circuit simultaneously. For consistency of performance and maximum life to tubes and other component parts, a switching arrangement is incorporated in the machine which enables the physician to adjust the operating voltages on filament grid and plate to line voltage variations within a range of from 105 to 135 volts in the power supply line.

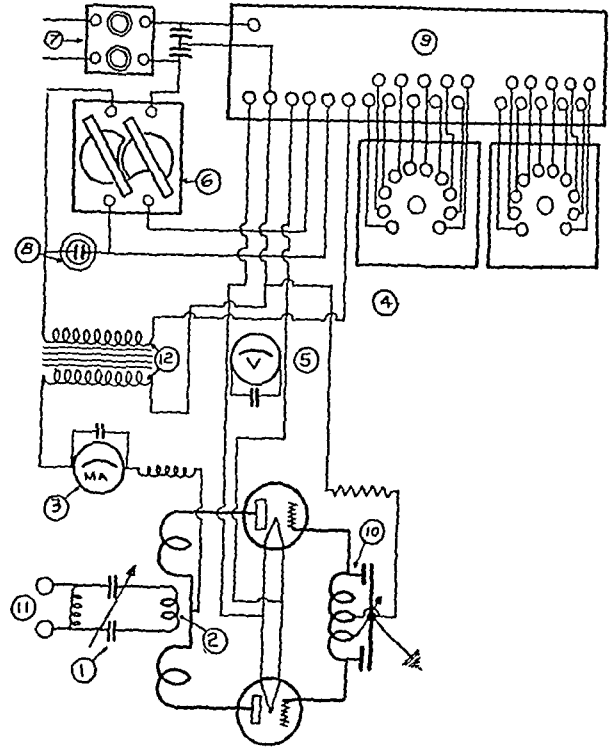
A two-circuit line switch is employed as follows: First stage supplies the current to the filament and in the second stage connects the supply to the plate current of the tube. The physician is not likely to make any error in switching on the currents, as the rotation is automatic. This avoids shock to the tube which results from simultaneous application of the two currents. It also permits the use of a foot switch in the plate circuit only while the filament circuit is on, which is preferable for surgical use.

When this unit is operated under full load, it draws not more than 1,200 watts from the 60 cycle, 115 volt alternating current supply line and delivers about 540 watts. The output was determined by means of a pair of metal plates attached to the terminals of an incandescent lamp. These plates are provided with a suitable condenser to permit tuning to resonance. The light output of the lamps or the energy delivered to them is measured by means of a photronic light sensitive cell, connected to a sensitive micro-ammeter. No claim is made by the firm that this type of measurement constitutes an exact equivalent of power available for therapeutic purposes.

The temperature rise of the transformer, after the machine had been operated at full load for two hours, was 32 C. Other temperatures in the cabinet were in proportion. The maximum rise is above the oscillating tubes. This rise was 42 C. Burns may be produced with this as with any other short wave unit but may be avoided by the use of ordinary precautions. The weight is about 160 pounds.

The original accepted model was submitted for use with cuff electrodes. In addition, the new model offers inductance cable and air spaced technics. The firm submitted evidence relative to the latter two technics, since it was felt that the cuff technic would give results similar to those with the already accepted model. The new tests were performed by an investigator acceptable to the Council.

Two male students, weighing 150 and 165 pounds respectively, were the subjects. A cannula was introduced at the midpoint of the thigh and inserted for a distance of two inches or until the bone was encountered. Temperature readings were made by means of thermocouples inserted into the cannula. The thermocouples were constructed by placing constantan and copper wires into the end of a hypodermic needle. The copper constantan junction was kept at 0 C. by means of a vacuum bottle full of crushed ice. The couples were calibrated against a mercury thermometer certified and calibrated by the National Bureau of Standards. Potential differ-



Schematic diagram of circuit.

ences were read from a Leeds and Northrup portable potentiometer of requisite sensitivity. The accuracy was believed to be within one tenth of a degree.

The air-spaced electrodes were from 1¾ to 2 inches from the skin, and 9 inches apart from center to center. They were curved.

Averages of Six Observations, Air-Spaced Technic, with 5 Inch Diameter Electrodes

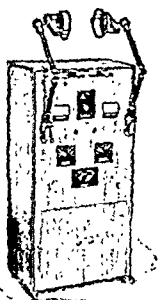
Temperatures			
Deep Muscle		Oral	
Initial	Final	Initial	Final
99.1	105.7	98.7	99.2

Averages of Six Observations, Cable Technic

Temperatures			
Deep Muscle		Oral	
Initial	Final	Initial	Final
98.9	104.7	99.3	99.8

When testing with the cable technic, approximately four turns of the cable were used, spaced approximately 1¾ inches apart, center to center. The distance between the coil and the thigh was spaced approximately 1¼ inches with felt, towel-ing or wooden spacers.

Evidence has been submitted with regard to pelvic heating. The technic for pelvic heating consisted in using a metal vag-



Peerless Ultra
Short Wave
Unit, Model
UW2M.

inal electrode with a hollow stem holding a thermometer and a large condenser pad placed on a shelf about 6 inches from the patient's sacrum. Treatment was administered to comfortable tolerance of the patient. In the series of eleven cases treated in the foregoing manner, the average final temperature was 107.5 F.

The unit was tried out in a clinic acceptable to the Council and rendered satisfactory service.

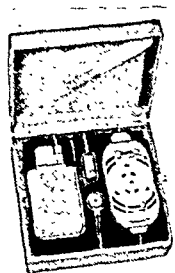
In view of the foregoing report, the Council on Physical Therapy voted to accept the Peerless Ultra Short Wave Unit, Model UW2M, for inclusion in its list of accepted devices.

RADIOEAR ACCEPTABLE

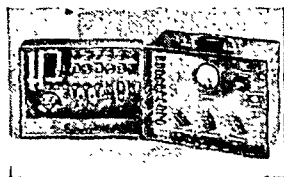
Manufacturer: E. A. Myers & Sons, 306 Beverly Road, Mount Lebanon, Pittsburgh.

The Radioear consists of a microphone, intensifier and receiver (for bone and air) with the necessary connecting cords. It is assembled in the laboratory at Pittsburgh from duplicates of the patients' own selection of component parts with the use of the firm's Selex-A-Phone. This is essentially a "master hearing aid" with which the patient can try many or all of the various combinations of microphones, intensifiers and receivers (both bone and air) and under various voltages. These combinations are cut in or out by means of knobs and switches.

In order to purchase this type of hearing aid, the customer first has an analysis of his hearing aid requirements made by the Selex-A-Phone. Then the results of these tests are sent to the factory in Pittsburgh, where the characteristics of the original analysis of hearing aid requirements are matched in the acoustical laboratory maintained by the manufacturer. To accomplish this the separate components of the hearing aid are adjusted, prior to the overall adjustment, to which certain specified tolerances. These parts are then tentatively assembled, and the final matching and aligning of the hearing aid to the



(1) Radioear De Luxe Model.



(2) Selex-A-Phone.

desired characteristics is performed on the hearing aid as a whole. The composite or overall alignment is considered by the manufacturer to be an important part of the construction of the hearing aid. After the laboratory has determined that the completed instrument meets the required specifications, it is forwarded to the office from which the order originated and the patient may compare its amplification characteristics with those of the Selex-A-Phone by which the analysis of hearing aid requirements was originally made.

The manufacturer states that his responsibility does not end when the individual has satisfied himself that the finished instrument has the desired characteristics. The customer has the option at any time within thirty days from the date of delivery of selecting any other hearing aid characteristic available on the Selex-A-Phone which he may find is more suitable for his requirements. This privilege is made available to the customer regardless of the fact that his subsequent decision may entail the supplying of an entirely different type of hearing aid. These changes may involve different characteristics for every component part of the hearing aid. When these alterations are made, they involve rebuilding the hearing aid to the new characteristics in the laboratory. The size, weight, amplification characteristics and appearance of the resulting instrument may be radically different from the original selection. Under this policy, if any error in the original selection has been made, or if the customer finds another characteristic more desirable, the firm then assumes the obligation of rebuilding the hearing aid free of charge. At the end of the thirty day period, the hearing aid is not returnable for full credit. The firm deducts \$35

from the purchase price to cover expenses incurred in assembling and testing the individual instrument at the laboratory.

Those units fitted by means of the Selex-A-Phone and coming to the attention of the Council's investigator appeared to give satisfactory service. The point is stressed by the firm that these instruments are all laboratory built.

In view of the foregoing report, the Council on Physical Therapy voted to accept the Radioear Hearing Aid for inclusion in its list of accepted devices.

Council on Foods

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED.

FRANKLIN C. BING, Secretary.

NUTRADIET FRESH GREEN ASPARAGUS PACKED IN WATER

Distributor.—The Nutradiet Company, a subsidiary of S & W Fine Foods, Inc., San Francisco.

Description.—Canned asparagus, packed in water without added sugar or salt.

Manufacture.—Asparagus on which no insecticide spray has been used is graded for size and quality and only the larger spears are retained. They are cut to 4 inch lengths, washed in running water, blanched, dipped in cold water, and a definite number of spears are packed in each can, which is weighed also. Water is added and the containers are exhausted, sealed and processed. The asparagus is in cans within six hours after it is cut.

Analysis (submitted by manufacturer).—Moisture 93.3%, total solids 6.7%, ash 0.4%, fat (ether extract) 0.2%, protein ($N \times 6.25$) 2.8%, crude fiber 0.6%, carbohydrates other than crude fiber (by difference) 2.7%.

Calories.—0.24 per gram; 7 per ounce.

Claims of Manufacturer.—For use in special diets in which sugar or salt is proscribed or in quantitative diets of calculated composition.

STOKELY'S FOR BABY SPECIALLY PREPARED STRAINED BEETS

Manufacturer.—Stokely Brothers & Company, Indianapolis.

Description.—Strained beets, seasoned with salt, retaining in high degree the natural vitamin and mineral content.

Manufacture.—Selected, fresh tender beets are thoroughly washed and inspected, steamed in a closed kettle, peeled, sieved in a steam atmosphere, salt is added, and the product is canned and processed as described for Stokely's Strained Green Beans (THE JOURNAL, May 26, 1934, p. 1763).

Analysis (submitted by manufacturer).—Moisture 85.7%, total solids 14.3%, ash 1.2%, sodium chloride 0.54%, fat (ether extract) 0.2%, protein ($N \times 6.25$) 1.4%, crude fiber 0.6%, carbohydrates other than crude fiber (by difference) 10.9%, alkalinity number (cc. normal acid per gram ash) 16.4.

Calories.—0.5 per gram; 14 per ounce.

Vitamins.—The natural vitamin content is claimed to be retained in large measure in the manufacturing process by the use of equipment and procedure which exclude incorporation of air.

VALLEY LEA BRAND EVAPORATED MILK

Manufacturer.—Producer's Creamery, Marion, Ind.

Description.—Unsweetened, sterilized, evaporated milk.

Manufacture.—Milk from company inspected farms is tested, preheated, evaporated, homogenized, cooled, standardized, filled into cans, sealed, and sterilized.

Analysis (submitted by manufacturer).—Moisture 73.8%, total solids 26.2%, ash 1.6%, fat (ether extract) 8.2%, protein ($N \times 6.38$) 7.0%, lactose (by difference) 9.4%.

Calories.—1.4 per gram; 40 per ounce.

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SATURDAY, MAY 21, 1938

POLIOMYELITIS INFECTIVITY OF HUMAN STOOLS

The recent isolation of the virus of poliomyelitis from human feces¹ is presumably additional evidence that viable virus can pass through the gastrointestinal tract. There is as yet no experimental evidence that this virus proliferates in the intestine. Nevertheless, identification of the virus in human stools suggests that certain precautions should be taken that are now generally considered unnecessary.

Following the successful transmission of poliomyelitis to monkeys, tests were made as early as 1912 of the infectivity of fecal poliomyelitic material. Kling, Pettersson and Wernstedt² of Stockholm, Sweden, reported the successful inoculation of monkeys by the intracerebral injection of colonic washings from infants during both the acute and the convalescent period of infantile paralysis. This result was confirmed three years later by Sawyer.³ Since lethal paralytic effects can be produced by control intracerebral injection of normal fecal extracts, this earlier apparently successful isolation and identification of the virus in human stools was generally discredited.

Last year, Harmon⁴ repeated these early tests under adequately controlled conditions and was able to isolate and identify poliomyelitis virus in the stools of four of twenty patients tested. The most convincing evidence of intestinal infectivity, however, is currently reported by Dr. J. D. Trask¹ and his co-workers of the department of pediatrics at Yale University. The Yale pediatricians tested fecal infectivity by the less toxic method of intraperitoneal injection in monkeys. In their technic, 120 cc. of distilled water was added to the whole stool of the infant and the mixture agitated and allowed to stand for two hours at room temperature. The supernatant fluid (90 cc.) was then pipetted off into a rubber stoppered flask and

partially sterilized by the addition of 15 per cent ether (U. S. P.). After storage for twenty-four hours at refrigerator temperature, 30 cc. of the etherized supernatant fluid was injected intraperitoneally into monkeys. As an alternate method the ether was removed and the fluid reduced to about a tenth of its original volume by vacuum distillation. This concentrate was also to be used for control intracerebral injections. Of the eleven monkeys thus far injected intraperitoneally with the etherized supernate, but one developed peritonitis and bacteremia.

By this intraperitoneal technic the Yale pediatricians successfully recovered viable poliomyelitis virus from the stools of an 18 months old infant on the second, fourteenth and twenty-fifth days of the disease. Monkeys thus inoculated usually had typical paralytic symptoms on the seventh day. Paralytic symptoms and histologic lesions were characteristic of experimental poliomyelitis in this animal. Successful passage to a second monkey was accomplished by routine technics. Additional work must be done, however, before a final interpretation of these results is possible.

THE EFFECT OF ANESTHETICS ON HEPATIC FUNCTION

The hazard of operative procedures in patients with diseased livers suggested the desirability of determining the state of hepatic function before subjecting such patients to the combined risk of anesthesia and operative trauma. Rosenthal and Bourne¹ have pointed out that the changes which anesthetics produce in the liver undoubtedly occur also in most other organs and are but a reflection of the widespread depression of cell activity resulting from certain anesthetics. The appraisal of the functional capacity of the liver is formidable because of the multiplicity and diversity of its functions. The various functional tests thus far available could do no more than reflect the state of one of these functions. A satisfactory answer to the query therefore could be reached only through study of several of the hepatic functions. There is, however, no correlation between the type of pathologic lesion present in the liver and the function that is disturbed. According to Soffer,² one positive test is as significant an index of the presence of damage as would be the case if all the tests were abnormal.

The excretion tests are based on the ability of the liver to remove from the blood stream certain dyes that are excreted in the bile. Bromsulphalein, a dye synthesized by White, was found by Rosenthal and White to be excreted rapidly in the bile. Eighty-five per cent could be recovered in the rabbit's bile within one hour after an intravenous injection. Normally the liver can remove this dye almost completely from the blood within fifteen minutes after injection, but if

1. Trask, J. D.; Vignec, A. J., and Paul, J. R.: *Proc. Soc. Exper. Biol. & Med.* 38: 147 (Feb.) 1938.

2. Kling, C.; Pettersson, Alfred, and Wernstedt, W.: *Communications Inst. med. Etat Stockholm* 3: 5, 1912.

3. Sawyer, W. A.: *Am. J. Trop. Dis. & Prev. Med.* 3: 164, 1915.

4. Harmon, P. H.: *The Use of Chemicals as Nasal Sprays in the Prophylaxis of Poliomyelitis in Man*, J. A. M. A. 109: 1061 (Sept. 25) 1937.

1. Rosenthal, S. M., and Bourne, Wesley: *The Effect of Anesthetics on Hepatic Function*, J. A. M. A. 90: 377 (Feb. 4) 1928.

2. Soffer, L. J.: *Present Day Status of Liver Function Tests*, *Medicine* 14: 185 (May) 1935.

the liver is injured the dye is not taken up and remains in the blood for a long time. The investigators found that the dye when injected in dogs in doses of 5 mg. per kilogram of body weight was no longer recoverable from the blood fifteen minutes after its injection. In their experiments on dogs, utilizing the bile pigment disturbances and the bromsulphalein test, they found that brief periods of anesthesia with chloroform are sufficient to produce both immediate and delayed toxic effects on the liver. Administration of chloroform for one-half hour causes injury that requires eight days for functional recovery; two hours of anesthesia requires six weeks for return to normal. Ether produces a definite but transitory impairment to function. Nitrous oxide and ethylene, administered through a mask, did not produce any change in the bromsulphalein test for hepatic function or any disturbances in the bile pigment. Nitrous oxide and ethylene given in a closed chamber with poor oxygenation caused both immediate and delayed toxic effects on the liver. Cyanosis in itself, they say, was found to increase the toxicity of anesthetics on the liver. The authors feel that ethylene would seem to be the anesthetic of choice for operation in cases of severe disease of the liver.

Robertson, Swalm and Konzelman³ concluded on the basis of their clinical studies in 118 cases that the bromsulphalein excretion test and the icteric index determination most frequently agree with the clinical picture. Coleman,⁴ in a recent communication, reports a series of one hundred surgical cases which were studied relative to the effect of anesthesia on hepatic function. The bromsulphalein dye excretory test was used, 10 per cent or less being accepted as a normal retention. It was found that avertin with amylene hydrate produces hepatic damage in a higher percentage of cases and to a greater degree than nitrous oxide, ether vapor anesthesia, nitrous oxide and oxygen, spinal, local, and open ether anesthetics. The liver is slower in recuperating from the damage produced by avertin with amylene hydrate than from the other four types of anesthesia which produced hepatic damage. Nitrous oxide and oxygen results in damage to the liver in a smaller percentage of the cases than nitrous oxide and ether vapor, and spinal anesthesia; however, the damaged liver from nitrous oxide and oxygen recuperates at about the same rate as the liver damaged by nitrous oxide and ether vapor. Local anesthesia did not produce liver damage. Avertin with amylene hydrate was found to be most toxic to the liver, and, in order of decreasing toxicity, nitrous oxide and ether vapor, spinal, nitrous oxide and oxygen, and local anesthesia. The longer the anesthesia and the older the patient, the greater will be the chances of hepatic damage from an anesthetic. If impaired function exists prior to the administration of anesthetics, it is a

certainly that additional damage to the liver will result. Coleman found also that patients with uncomplicated and smooth convalescence seldom gave evidence of hepatic damage. If a rise in the percentage of retention of the dye occurs after the first postoperative day, a complication will usually be found. Excluding infections of the liver and biliary tract, pulmonary tuberculosis, chronic sepsis and overwhelming infections, surgical cases with an associated infection such as acute appendicitis, abscesses and wound infections will not show evidence of impaired hepatic function resulting from the infection per se.

The need for a more or less standardized test for hepatic function has been felt for some time. Some of the unexplained deaths following operations for gall-bladder disease were no doubt due to grave impairment of the hepatic function. The van den Bergh test and the icteric index proved their value in the management of the jaundiced patient; in the absence of jaundice the bromsulphalein test is probably most valuable. In view of the enormous part played by the liver in various defense mechanisms of the body, the determination of its functional status might well be included as a routine procedure among preoperative biologic analyses.

OPERATIONS: FREQUENCY AMONG 9,000 FAMILIES

Scientific surgery has advanced greatly and the number of operations has increased vastly in the past fifty years. The extent to which this has occurred is perhaps not generally appreciated. Matas has stated that in 1881 there were 172 operations among 5,309 admissions to the Charity Hospital in New Orleans, and two thirds of these were of an emergency character. In the same hospital in 1923 there were 16,405 operations among the 20,565 admissions—a striking illustration of the growth of surgery. Similarly, according to Collins,¹ United States Army and Navy records indicate that there are now about twice as many operations per thousand men in those organizations as in 1910. There is no accurate information available on the annual number of surgical operations in the United States.

The frequency of surgery in a given population group may be expressed either as the annual number of surgical operations per thousand persons under observation or as the percentage of all cases of illness that were treated surgically. The recent study by Collins of the nature and frequency of operations is based on a nationwide periodic canvass of illness among about 9,000 families involving 38,544 person years of observation. This was the same group of white families in 130 localities in eighteen states which was studied by the Committee on the Costs of Medical Care and the United States Public Health Service. For the total 38,544

3. Robertson, W. E.; Swalm, W. A., and Konzelman, F. W.: Functional Capacity of the Liver: Comparative Merits of the Five Most Popular Tests, *J. A. M. A.* 99: 2071 (Dec. 17) 1932.

4. Coleman, F. P.: The Effect of Anesthesia on Hepatic Function, *Surgery* 3: 87 (Jan.) 1938.

1. Collins, S. D.: Frequency of Surgical Procedures Among 9,000 Families, Based on Nationwide Periodic Canvasses, 1928-1931, *Pub. Health Rep.* 53: 587 (April 22) 1938.

person years there were 2,623 surgical operations, or an annual rate (adjusted for age) of sixty-five operations per thousand persons. This crude rate gives a startling picture. If it were representative of the full picture it would mean that every individual, on the average, would have one operation approximately every fifteen years or would have four operations altogether, assuming a life expectation of sixty years. But this does not represent a correct interpretation of what actually occurs. The operations included both primary and contributory causes of illness and in a few instances two or more operations in connection with the same diagnosis. Furthermore, the age distribution of the group was such as to give a preponderantly youthful sample and a group which contained two distinct surgical peaks. There were, in fact, approximately twice as many individuals included in the survey between 25 and 45 as in the group of 45 and over, and more under 5 years of age than between 15 and 25, a significant deviation from the age distribution of the general population.

The surgical procedures listed included everything from a major abdominal operation to lancing a boil or removing a wart; of the sixty-five operations per thousand, eighteen were tonsillectomies and adenoidectomies, seven settings of bone and nearly six appendectomies. The surgical peaks were accounted for by the high incidence of tonsillectomy in the age period from 5 to 9 and by increased surgery for female genital and puerperal diagnoses from 30 to 34. If operations in connection with injuries are considered as a unit they amounted to 20.3 per cent of the total, and the group of female genital and puerperal operations to 8.3 per cent. When these two are added to tonsillectomy and appendectomy, the four fairly specific types of operations made up about two thirds of all the surgical procedures.

The proportion of operations done as an emergency was not large. Because of the large number of non-emergency operations, Collins says, one would expect more surgery among higher income groups in which funds are available for medical care that is not immediately necessary. For males, operations were about twice as frequent among professional and business men as among unskilled laborers; clerks and skilled laborers fell between these two extremes. Similarly, Collins found that the frequency rates of surgery varied from fifty-two operations per thousand persons in families of annual incomes of less than \$1,200 to ninety-four in families of \$5,000 or more income. The proportion of operations was also higher in large cities than in rural areas, and the persons in the lowest income group that live in large cities likewise obtained more surgical treatment than those in the rural areas of similar economic status. Finally, this study showed that 61 per cent of all operations in the group had some hospital care; the other 39 per cent were done in the office, clinic or at home.

This interesting study constitutes a survey of certain phases of surgery in relation to the whole problem of illness. Any one who studies the statistical information available from the survey may manipulate it in a different manner; in view of the defective nature of the sample, from the point of view of age alone, the conclusions which can be deduced legitimately are seriously limited. Furthermore, since many of the surgical procedures were apparently nonemergency in nature and possibly of the "luxury" type, sweeping inferences on the relation to economic status do not seem justified. Possibly the next canvass of this nature can be devised to overcome some of these objectionable features in this otherwise interesting and valuable study.

Current Comment

HEREDITY AND OPHTHALMOLOGY

The island of Tasmania, with an area of 26,215 square miles and a population of 227,599, seemed to offer suitable conditions for a study of heredity in ophthalmic disease. Although its population is made up principally of peoples of purely British origin, the investigation, according to Hamilton,¹ was extremely difficult because of the reticence of many residents about their antecedents and because of the sparse and scattered nature of most of the settlements. Of 4,880 patients with eye disease seen by him in private practice during the previous five years 119, or roughly two and one-half in every hundred, proved to have authentically hereditary disease. The diseases observed in these patients, as well as in those seen in hospital practice, represented a variety of conditions and were associated in many instances with a number of hereditary abnormalities of the nervous system, such as amaurotic family idiocy, Friedreich's ataxia and hereditary cerebellar ataxia. The problem, as far as it relates at least to Tasmania, is carefully considered from a number of points of view, including the sociological, educational, employment and welfare aspects. In the prevention of hereditary eye disease, Hamilton's observations that 37.7 per cent of the blind are suffering from hereditary disease of the eye is of great significance. The discussion of this problem follows the outline suggested by Franceschetti at the 1935 meeting of the International Association for the Prevention of Blindness: the collection of precise and complete statistics can be improved by the adoption of a universal form for examination and report on all blind persons admitted to the registry, by a universal definition of blindness, by the certification of the blind only by specially qualified medical practitioners, and finally by the authorization of the collection of accurate statistics by a select subcommittee. In Tasmania as elsewhere, Hamilton points out, Franceschetti's suggestion on the training of physicians in eugenics and the education of authorities and the public has received little support.

1. Hamilton, J. B.: The Significance of Heredity in Ophthalmology: Preliminary Survey of Hereditary Eye Diseases in Tasmania, *Brit. J. Ophth.* 22: 19 (Jan), 83 (Feb.), 129 (March) 1938.

Furthermore, the extension of facilities for premarital consultation with regard to the presence or absence of inheritable disease will incur, Hamilton thinks, the disapproval of the populace, although sooner or later a stand must be taken to combat the evil results of the propagation of hereditary disease. Finally, after brief discussions of the value of increased use of social service workers and decrease in consanguineous marriages, Hamilton reviews the status of hereditary disease of the eye in the light of those countries which have passed sterilization laws and cites the conclusions of the Broche report on the sterilization of the hereditary blind. Certainly, at the very least, an intelligent understanding of such facts as are brought out in studies of this nature is essential.

LOCUS OF DEAMINIZATION

In the course of metabolism, the nitrogen of the absorbed amino acids is removed, converted to urea and largely excreted in this form. In the early years of the present century, feeding experiments showed that alanine was at times converted to lactic acid. The perfusion studies of Embden and Kraus¹ and, later, the striking investigations of Bollman, Mann and Magath² focused attention on the liver as the site where the removal of the amino group from amino acids occurred. As so frequently happens, newer experimental procedures frequently open new vistas with respect to function; for several years the method of surviving tissue slice cultures has been employed to extend the scope of information regarding cellular metabolism. Using this device, Krebs,³ Kisch⁴ and others have demonstrated that, as judged by oxygen uptake and ammonia production when amino acids are added to the nutrient medium, kidney is more active in deamination than is liver. London and his co-workers,⁵ through the use of the angiotomy technic, have called attention to the part played by the intestinal wall in producing ammonia from amino acids. Again, Graham, Houchin and Turner⁶ have shown that the actively secreting mammary gland produces considerable quantities of urea, presumably from the metabolism of amino acids. These newer observations on the biochemical activity of various types of tissue are of fundamental significance; however, as Borsook and Jeffreys⁷ point out, despite the enhanced activity of the kidney, the liver, by virtue of its large relative mass, still is to be considered the most important site of deamination of amino acids. The recent study of Mason,⁸ in which he failed to note any utilization of amino acids by the kidney in unanesthetized dogs, would seem to support the preeminent position of the liver in respect to this phase of the metabolism of amino acids.

1. Embden, G., and Kraus, F.: *Biochem. Ztschr.* **45**: 1, 1912.
2. Bollman, J. L.; Mann, F. C., and Magath, T. B.: *Am. J. Physiol.* **78**: 258 (Oct.) 1926.
3. Krebs, H. A.: *Ztschr. f. physiol. Chem.* **217**: 191, 1933; *Biochem. J.* **29**: 1620 (July) 1935.
4. Kisch, B.: *Biochem. Ztschr.* **280**: 41, 55, 1935.
5. London, E. S.; Dubinsky, A. M.; Wassilewskaja, N. L., and Prochorova, M. J.: *Ztschr. f. physiol. Chem.* **227**: 223, 1934.
6. Graham, W. R., Jr.; Houchin, O. B., and Turner, C. W.: *J. Biol. Chem.* **120**: 29 (Aug.) 1937.
7. Borsook, Henry, and Jeffreys, C. E. P.: *J. Biol. Chem.* **110**: 495 (July) 1935.
8. Mason, M. F.: *Proc. Soc. Exper. Biol. & Med.* **37**: 111 (Oct.) 1937.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ARIZONA

State Medical Election.—Dr. Charles S. Smith, Nogales, was chosen president elect of the Arizona State Medical Association at its annual meeting in Tucson April 21-23. Dr. Harold W. Rice of Bisbee was installed as president. Other officers are Drs. Leslie R. Kober, Phoenix, vice president; Delamere F. Harbridge, Phoenix, secretary, and Clarence E. Yount, Prescott, treasurer.

CALIFORNIA

Two New Mental Institutes.—Construction will soon begin on two state mental health centers, one in Los Angeles and one near San Francisco, newspapers reported April 10. Authorized by the 1937 legislature, the centers will each cost about \$1,500,000 and have a capacity of 300 beds. All mental cases will be cleared through the centers.

Lectures on Medical Sociology.—The division of medical history and bibliography of the University of California Medical School, San Francisco, recently sponsored a series of open forum meetings on medical sociology. Lecturers and their subjects were:

- Paul Dodd, Ph.D., Cost of Medical Care.
- E. F. Penrose, Ph.D., Theory of Health Insurance.
- E. H. Huntington, Ph.D., Adequate Health Insurance Benefits.
- Dr. Philip K. Brown, Health Insurance in the United States.
- Albert H. Mowbray, A.B., Actuarial Principles of Insurance and Health Insurance.
- Dr. William P. Shepard, The Physician's Place in the Community.
- Dr. Hans A. Meyer, Health Insurance in Germany.
- Dr. John B. de Cusance M. Saunders, Health Insurance in Great Britain.
- Dr. Thomas Henshaw Kelly, Organized Medicine and Health Insurance.
- Dr. Eugene S. Kilgore, Relationship of Government to Medicine.

CONNECTICUT

Lilly Award to Dr. White.—Abraham White, Ph.D., assistant professor of physiologic chemistry, Yale University, New Haven, received the \$1,000 prize and bronze medal of Eli Lilly and Company at the ninety-fifth annual session of the American Chemical Society in Dallas April 18 for his work on sulfur metabolism and protein hormones. Dr. White is a native of Cleveland; he graduated at the University of Denver and later studied at the University of Michigan. He joined the faculty at Yale as instructor in 1933 and became assistant professor last year.

State Medical Meeting at Groton.—The one hundred and forty-sixth annual meeting of the Connecticut State Medical Society will be at the Hotel Griswold, Groton, June 1-2, under the presidency of Dr. Charles H. Turkington, Litchfield. The speakers will include:

- Lieut. Allan S. Chrisman, medical corps, U. S. Navy, Submarine Escape Training.
- Dr. Theodore G. Klumpp, Washington, D. C., chief medical officer, Food and Drug Administration, U. S. Department of Agriculture, Drug Problems.
- Dr. Francis M. Rackemann, Boston, Skin Tests to Foods and Dusts.
- Dr. Roy W. Mohler, Philadelphia, Gonorrhea in Women.
- Dr. Abernethy Benson Cannon, New York, Cutaneous and Systemic Manifestations of Lymphogranuloma Inguinale and Its Differential Diagnosis.
- Dr. Aubrey O. Hampton, Boston, Roentgenological Signs of Bronchial Occlusion, Their Differential Diagnosis and Treatment.
- Charles H. Durfee, Ph.D., Wakefield, R. I., Reeducation of the Problem Drinker.
- Dr. John L. Rice, New York, Syphilis Control in New York City.
- Dr. William Harley Glafke, New York, Changing Attitudes in the Treatment of Peptic Ulcer.
- Dr. Richard Townley Paton, New York, Motion Pictures of Eye Operations.
- Dr. Bernard B. Raginsky, Montreal, Hypnotism and Its Relation to Anesthesia, with Demonstrations.

A symposium on psychiatry and general medicine will be presented by Drs. Charles G. Barnum, Groton, and Eugen Kahn, New Haven, and one on psychiatric service for the community by Drs. Lloyd J. Thompson, New Haven, and Clifford D. Moore, Newtown. Frederic C. Walcott, state commissioner of welfare, will address the annual dinner of the society on "Humane Resources of Connecticut." The Connecticut Association of Medical Examiners and the Connecticut Occupational Therapy Association will also meet. The Hezekiah Beardsley Pediatric Club will be addressed by Dr. Joseph

C. Aub, Boston, on "Endocrine Abnormalities in Childhood." Dr. Eleanor J. T. Calverley, Hartford, will discuss "Medical Experiences in Arabia" at a luncheon of the Women's Medical Society Wednesday morning. The annual meeting of the house of delegates of the state medical society will be held at New Haven May 25, in accordance with a newly adopted plan.

GEORGIA

Personal.—Dr. Abram J. Davis, director of health of Burke County, was elected president of the Southeast Georgia Public Health Association at its meeting April 9 in Waynesboro. Dr. William L. Gilbert, health officer of Fulton County, Atlanta, has resigned on account of ill health but will continue in the position until his successor has been named.

University News.—Crawford W. Long Day was celebrated at the University of Georgia, Athens, March 30. Dr. George A. Traylor, Augusta, president of the Medical Association of Georgia, gave an address. The prize of \$25 offered by the Crawford W. Long Memorial Association to the undergraduate student of the university presenting the best paper on the subject "Why I Wish to Be a Doctor" was awarded to Mr. William Russell, Athens.

Society News.—Dr. John L. Dorough, Monroe, addressed the Walton County Medical Society in Monroe, recently, on "Syphilis as It Relates to Cooks and Other Handlers of Food."—Dr. John R. Martin, Chattanooga, Tenn., discussed "Diagnosis and Treatment of Pathologic Vaginal Bleeding" before a recent meeting of the Catoosa-Dade-Walker Counties Medical Society in Lafayette.—Dr. Otis R. Thompson, Macon, discussed "Human Sterility" before the Macon Medical Society of Bibb County April 5.—At a meeting of the Thomas County Medical Society in Thomasville recently Drs. Benjamin A. Wilkinson, Tallahassee, Fla., spoke on "Pneumonia During Childhood" and Charles H. Ferguson, Thomasville, "Serum Therapy in Pneumonia."

Railroad Surgeons' Meeting.—The eighteenth annual meeting of the Surgical Association of the Atlanta and West Point Railroad Company, the Western Railway of Alabama and the Georgia Railroad was held at the Atlanta-Biltmore Hotel, Atlanta, March 24. Guest speakers included Drs. Oliver C. Wenger, U. S. Public Health Service, on syphilis, and William J. Lancaster, superintendent and medical director, relief department, Atlantic Coast Line Railroad, Wilmington, N. C. Dr. Richard Binion, Milledgeville, delivered the presidential address, on "Surgical Management of Head Injuries."

ILLINOIS

Society News.—The city medical society held a special meeting on syphilis in Peoria April 27; the speakers were Reuben L. Kahn, Sc.D., Ann Arbor, on "Interpreting Paradoxical Serum Reactions in Syphilis"; Dr. Albert E. Russell, Washington, D. C., "Syphilis in Industry," and Dr. David C. Elliott, Springfield, "Syphilis and Its Relation to Public Health." Dr. Herbert R. Edwards, New York, discussed "Tuberculosis Case Finding" before the society May 3 and Dr. Maxim Pollak, Peoria, "Lung Cancer."—Dr. John T. Gernon, Chicago, addressed the McDonough County Medical Society at Macomb April 20 on "Medical and Surgical Consideration of Renal Calculi."—At a meeting of the Will-Grundy County Medical Society April 20 Dr. G. Henry Mundt, Chicago, spoke on "Management of Chronic Nasal Infection."

Chicago

Robber Calls on Pregnant Women.—The Chicago Police Department has reported that a man has been making calls on pregnant women claiming that he was sent by the city or state health department, or some hospital in the vicinity, or the WPA to examine them. He sends the patient in another room to prepare for the examination and then proceeds to rob them of such money or valuables as he can find. The man has so far given no name, he is dark complexioned, about 40 years of age, 5 feet 6 inches tall, weighs about 130 pounds, has gray hair about the temples and wears dark horn-rimmed glasses. He is well dressed, with a blue suit, black oxfords and light gray fedora hat. It is also reported that he has been operating the same racket in Toledo and some other cities. The police department should be notified if this man again makes his appearance.

Research on Psychiatry.—The Rockefeller Foundation has given \$150,000 to the University of Chicago over a period of three years and extended its grant to the Chicago Institute for Psychoanalysis for a period of five years to support research in psychiatry. The gift to the university supplements

the work of a gift of \$168,000 three years ago which financed the establishment of a twelve bed psychiatric unit in the university clinics, staffed by a group of five physicians. Dr. David Sligh, professor of psychiatry, is in charge. In addition to the new grant to the Institute of Psychoanalysis, \$20,000 has been made available for institute fellowships to be awarded young psychiatrists who hold research or teaching posts in psychiatry at universities or other institutions. The institute was founded five years ago with Dr. Franz Alexander as director. The research program has covered the study of emotional factors in the causation of gastrointestinal disturbances, chronic high blood pressure, asthma and hay fever and on the therapy of such cases, the psychoanalytic technic being used.

Rush Alumni Reunion.—The Rush Medical College of the University of Chicago will hold its alumni assembly at the college June 6-7. Clinics covering the specialties will be held at Presbyterian and Cook County hospitals and the Central Free Dispensary, and general discussions will be presented by the following:

Dr. Richard K. Gilchrist, Pathology of Cancer of the Rectum.
Dr. Adrien H. P. E. Verbruggen, Treatment of Acute Brain Injury.
Dr. Ernest E. Irons, Etiology and Pathology of Aspiration Pneumonia.
Dr. George W. Hall, Relationship Between Mental and Surgical Symptoms.
Dr. Gladys R. H. Dick, Scarlet Fever Control.
Dr. William A. Thomas, Water Balance in Medicine and Surgery.
Drs. Willard O. Thompson and Norris J. Heckel, Use and Abuse of Hormone Therapy in Undescended Testicle and Hypogonadism.
Dr. Edward D. Allen, Endometriosis.
Dr. Carl O. Rinder, Hypoglycemia.
Dr. Archibald L. Hoyne, Therapy of Acute Poliomyelitis.
Drs. Arno B. Luckhardt and Jay B. Carter, Ethylene Anesthesia.
Dr. Dean Lewis, Baltimore, Endocrinology of Surgery.
Dr. Albert H. Montgomery, When Not to Operate in Acute Appendicitis.
Dr. Sidney A. Portis, Clinical Significance of Cholecystography.

Dr. Lewis will also address the annual banquet at the Drake Hotel Tuesday evening; Dr. George W. Hall will be the toastmaster.

INDIANA

New Department of Industrial Hygiene.—The state department of public health has created a new department of industrial hygiene with Dr. Louis W. Spolyar, Indianapolis, in charge. Expected to be in operation by July 1, the new department plans as its first activity a general survey of industries of the state and a classification of them as to specific type of employment and the number of persons engaged. Later one health hazardous industry will be selected for detailed study and survey as to the actual amount of industrial disease, according to the state medical journal.

Annual Graduate Course.—The annual graduate course of the Indiana University School of Medicine, Indianapolis, and the Indiana State Medical Association will be held at the medical school May 23-27. The specialties will be covered in clinics, laboratory demonstrations, and clinico-pathologic conferences and the speakers, according to a preliminary program, include Vilhjalmur Stefansson, Ph.D., New York; Drs. Philip C. Jeans, Iowa City; Charles F. McKhann, Boston; Henry G. Poncher, Chicago; James S. Plant, Newark, N. J., and Arthur E. Hertzler, Kansas City. Representatives of the U. S. Army are also scheduled to speak. The county secretaries, state pediatric society and Alpha Omega Alpha will attend special dinners during the session.

IOWA

Annual Renewal Fees Due Before June 1.—All licenses to practice medicine and surgery in Iowa expire annually on June 30. To renew such a license a licentiate must make a written application to the state department of health before June 1, enclosing the renewal fee of \$1. If a license expires by reason of the licentiate's failure to renew it, it can be reinstated without reexamination only on the recommendation of the state department of health and the payment of the overdue fees.

New Director of Emergency Relief.—Dr. Channing G. Smith, Granger, has been appointed medical director of the Iowa Emergency Relief Administration, succeeding Dr. Thomas C. Denny, Des Moines. Dr. Smith was president of the Iowa State Medical Society in 1931-1932.

KANSAS

Personal.—Dr. Clyde W. Miller has resigned as superintendent of the Sedgwick County Hospital, Wichita, effective May 1.—Dr. Robert C. Hutcheson, Elk Falls, who has been practicing for more than fifty years, was made an honorary member of the Elk County Medical Society at a meeting in Howard March 3.

The Porter Lectureship in Medicine.—The eighth course of lectures under the Porter Lectureship in Medicine was given by Dr. William Boyd, professor of pathology, University of Toronto Faculty of Medicine, Toronto, April 19-20. One lecture was given April 19 on "Bronchial Carcinoma" and two April 20 on "Growth, Normal and Abnormal" and "Nephritis."

MASSACHUSETTS

Course in Medicomilitary Training.—A graduate course for training medical department reserve officers in medicomilitary subjects will be held at the Harvard Medical School, Boston, June 1-14. The course has been planned to afford clinical and didactic graduate instruction in subjects which will be of practical value to medical reserve officers in their daily practice and in training them for emergency duties as army officers. The charges usually made for graduate courses have been omitted by the university and the only payment required will be the regular registration fee of \$5.

State Medical Meeting at Boston.—The one hundred and fifty-seventh annual meeting of the Massachusetts Medical Society will be held at the Hotel Bradford, Boston, May 31-June 2, under the presidency of Dr. Channing Frothingham, Boston. The following will speak, among others:

- Dr. Arthur M. Shipley, Baltimore, Treatment of Peritonitis Complicating Appendicitis.
- Dr. Owen H. Wangenstein, Minneapolis, Acute Bowel Obstruction: Its Recognition and Management.
- Dr. Robert L. DeNormandie, Boston, Cesarean Section in the State of Massachusetts in the Year 1937.
- Dr. John G. Downing, Boston, Are Patch Tests of Real Value in Dermatology?
- Dr. Henry Jackson Jr., Boston, The Protean Character of the Leukemoid States.
- Dr. Thomas H. Lanman, Boston, The Surgical Significance of Urinary Incontinence in Infancy and Childhood.
- Dr. Edward D. Churchill, Boston, The Surgical Treatment of Bronchiectasis.
- Dr. Elliott P. Joslin, Boston, The Diabetic Situation in Massachusetts.
- Dr. James Burns Amberson Jr., New York, The Significance of Latent Forms of Tuberculosis.
- Dr. Frank H. Krusen, Rochester, Minn., Physical Measures of Value to the General Practitioner in the Treatment of Arthritis.
- Dr. Frederick O. Coe, Washington, D. C., The Roentgen Ray Therapy of Inflammatory Lesions.

Dr. Thomas Parran, Washington, D. C., will give an address Tuesday evening on "Work and Aims of the Public Health Service," and Dr. David Riesman, Philadelphia, will deliver the Shattuck Lecture on "America's Contribution to Nosography." The annual oration will be delivered Thursday afternoon by Dr. Allen G. Rice, Springfield, on "The Passing of Surgical Yeomen." A program of entertainment has been planned for the ladies, including luncheon, tea, visits to historic places of interest and a tour of the Isabella Stuart Gardner Museum.

MICHIGAN

School Health Education Institute.—The division of hygiene and public health and the extension service of the University of Michigan, cooperating with the Michigan School Health Association, will conduct a school health education institute May 27-28 at the Michigan Union of the university, Ann Arbor. The speakers will include:

- Dr. John Sundwall, Trends in School Health Education.
- James B. Edmonson, Ph.D., dean, School of Education, University of Michigan, Some Debatable Issues in Health Education.
- Dr. Thurman B. Rice, Indianapolis, Seekers of Health.
- Dr. Henry Cook, Flint, The Medical Profession and the Public Schools.
- Dr. Don W. Gudakunst, Lansing, The State Department of Health and Health Education.
- Dr. Bernard W. Carey, Detroit, The Michigan School Health Association: What It Stands For.
- Dr. John W. Bean, Ann Arbor, The Physiological Basis of Health.
- Dr. Warren E. Forsythe, Ann Arbor, Health Misconceptions.
- Kenneth A. Esslick, D.D.S., Ann Arbor, A Six Point Program for the Improvement of Dental Health.
- Dr. Paul H. Jordan, Ann Arbor, Child Guidance in the Public Schools.

MISSISSIPPI

State Medical Election.—Dr. James P. Wall, Jackson, was chosen president elect of the Mississippi State Medical Association at its annual meeting in Jackson April 21 and Dr. Joseph E. Green, Laurel, was installed as president. Other officers chosen were vice presidents: Northern district, Dr. Monteville Q. Ewing, Amory; central district, Dr. Richard B. Austin, Forest, and southern district, Dr. Benjamin T. Robinson, New Augusta. The next annual session will be held in Gulfport. A resolution was approved establishing a fund for indigent and disabled physicians.

NEW MEXICO

State Medical Meeting in Santa Fe.—The fifty-sixth annual meeting of the New Mexico Medical Society will be held at La Fonda Hotel, Santa Fe, June 6-8, under the presidency of Dr. Eugene W. Fiske, Santa Fe. Guest speakers announced are:

- Dr. Felix P. Miller, El Paso, Texas, Prevention of Accidents.
- Dr. Francis C. Goodwin, El Paso, Complicated Fractures.
- Dr. James J. Gorman, El Paso, Jaundice: Its Significance as a Symptom.
- Dr. Henry T. Safford, El Paso, Anal Infections.
- Dr. Horton R. Casparis, Nashville, Tenn., Nutrition in Infants and Children.
- Dr. Gerrit Heusinkveld, Denver, Subinvolution of the Uterus.
- Dr. Verne C. Hunt, Los Angeles, Lateral Gastroduodenostomy in the Surgical Treatment of Duodenal Ulcer.
- Dr. Harold C. Habein, Rochester, Minn., Intravenous Medication.
- Dr. Gottlieb Werley, El Paso, Angina, Atherosclerosis and Food Allergy.
- Dr. Thomas E. Carmody, Denver, Present Status of Treatment of Sinus Disease.
- Dr. Arthur E. Smith, Los Angeles, Reconstructive and Plastic Surgery.
- Dr. Arthur Elmer Belt, Los Angeles, Endocrinology of Prostatic Hypertrophy.
- Dr. Frank R. Teachenor, Kansas City, Mo., Surgical Treatment of Cranial-Cerebral Injuries.

New Mexico physicians on the program are Drs. John R. Van Atta, Albuquerque, on "Short Wave Therapy"; Donat F. Monaco, Gallup, "Management of Intestinal Obstruction," and Lee M. Miles, Albuquerque, "Ectopic Pregnancy."

NEW YORK

New Home for Rochester Societies.—The Rochester Academy of Medicine recently raised a fund of \$150,000 to enlarge its headquarters and to establish an endowment fund. The academy has received also as a gift the home of the late Edmund Lyon, philanthropist, presented by his daughters as a memorial to their parents. The home is a brick house on East Avenue, with thirty-two rooms and four acres of landscaped grounds. The first floor will be used as a lounge, the



New home of Rochester medical societies.

second will be remodeled for the academy's library and the third has an auditorium, which will be retained for small meetings. An addition will be built beside the old building providing an auditorium for 400 persons and a stackroom to open into the library room. The Medical Society of the County of Monroe and the Rochester Pathological Society will share the building with the academy. This will be the third home of the academy. The first was purchased in 1914 near the business district of the city and sold ten years later. The present home near the women's college of the University of Rochester has become inadequate. Dr. Albert D. Kaiser, president of the academy during the past year, is chairman of the building project. Dr. David B. Jewett, chairman of the library committee, is president for the coming year.

New York City

British Medal to Dr. Schick.—The Addingham Gold Medal has been awarded by the University of Leeds, England, to Dr. Bela Schick, chief of the pediatrics department of Mount Sinai Hospital, in recognition of his development of the susceptibility test for diphtheria and other contributions to medicine. The medal was presented in absentia April 12 by the Lord Mayor of Leeds. Dr. Schick received the gold medal of the New York Academy of Medicine March 3 on the twenty-fifth anniversary of the announcement of the Schick test (THE JOURNAL, March 19, p. 906).

Dr. Goldwater Retires from Public Service.—Dr. Sigismund S. Goldwater, since 1934 commissioner, department of hospitals, New York City, has announced his retirement, but will continue in office until the appointment of his successor, according to the *New York Times*. Dr. Goldwater was superintendent of Mount Sinai Hospital from 1903 to 1916 and director from 1917 to 1929. He was commissioner of health of New York City from 1914 to 1918, and, in 1908, municipal expert in hospital construction and administration of New York. In 1908 he was president of the American Hospital Association, in 1913 vice president of the New York Academy of Medicine, in 1918-1921 vice president of the National Institute of Social Sciences and from 1924 to 1926 president of the American Conference on Hospital Service. He was medical counselor of the U. S. Veterans' Bureau in 1924. He is 65 years of age.

OHIO

Hospital News.—A new building was recently dedicated for the Toledo Convalescent Home for Crippled Children. It has facilities for eighty-eight children and cost \$250,000. It is under the sponsorship of the Toledo Society for Crippled Children.

Lectureship Endowed.—Dr. William E. Lower, Cleveland, has given to the Academy of Medicine of Cleveland a fund to be used for a lectureship of general interest to the medical profession. Dr. Lower directed that the lecture deal with some recent development or research, if advisable, but not confined exclusively to any one branch of medicine.

Society News.—Dr. Frederick A. Collier, Ann Arbor, will discuss "Water Balance in Surgical Patients" before the Academy of Medicine of Cincinnati May 24.—Dr. Claude S. Beck, Cleveland, addressed the annual meeting of the Cleveland Academy of Medicine May 20 on "Surgery of the Heart."—Dr. George I. Bauman, Cleveland, addressed the Summit County Medical Society, Akron, May 3 on osteomyelitis.—At a meeting of the Marion Academy of Medicine March 1 Dr. Karl D. Figley, Toledo, spoke on "Management of Pollen Therapy in Hay Fever and Asthma."—Dr. John A. Fraser, East Liverpool, addressed the Columbiana County Medical Society, Lisbon, March 8 on "Analgesia and Anesthesia in Obstetrics."—Dr. Daniel G. Sanor Jr., Columbus, addressed the Guernsey County Medical Society, Cambridge, March 3 on "Pathology of the Eye."—Dr. Harold G. Reineke, Cincinnati, addressed the Montgomery County Medical Society, Dayton, April 1 on "X-Ray Studies on Differential Diagnosis of Tuberculosis."—Dr. Charles E. Galloway, Evanston, Ill., addressed the Toledo Academy of Medicine, April 1, on "Lesions of the Cervix."

PENNSYLVANIA

Society News.—Dr. Samuel G. Henderson, Vandergrift, among others, addressed the Westmoreland County Medical Society, Scottdale, April 26, on "X-Ray Therapy in Carcinoma of the Breast."—Dr. Lester Hollander, Pittsburgh, addressed the Fayette County Medical Society, Uniontown, May 5 on cancer and conducted a clinic on skin disease.

Annual Clinic.—The Westmoreland County Medical Society will conduct its annual clinic in New Kensington May 26. The speakers will be:

Dr. George P. Muller, professor of surgery, Jefferson Medical College, Philadelphia.
Dr. Clifford B. Lull, assistant professor of obstetrics at Jefferson.
Dr. Edward L. Bortz, associate professor of medicine, University of Pennsylvania Graduate School of Medicine.

C. William Duncan, columnist, *Philadelphia Evening Ledger*, will be the guest speaker at the dinner.

District Meeting.—The Seventh Councilor District Medical Society held its annual meeting at the Williamsport Country Club, Williamsport, May 13. Addresses were delivered by the following officers of the state medical society: Drs. Walter F. Donaldson, Pittsburgh, secretary; Frederick J. Bishop, Scranton, president, and David W. Thomas, Lock Haven, president-elect. Fifty year testimonials were presented to the following:

Dr. Reuben H. Born, Montoursville, fifty-one years in practice.
Dr. Solomon F. Hakes, Tioga, fifty years in practice.
Dr. Wesley F. Kunkle, Williamsport, fifty years in practice.
Dr. Henry H. Smith, Johnsonburg, fifty-one years in practice.

Dr. Arthur C. Christie, Washington, D. C., discussed "Social Trends in Medicine." The woman's auxiliary held its annual meeting the same day.

RHODE ISLAND

State Medical Meeting.—The one hundred and twenty-seventh annual meeting of the Rhode Island Medical Society will be held at the Rhode Island Medical Library, Providence, June 1-2, under the presidency of Dr. Walter C. Rocheleau, Woonsocket. Clinics will be held at the local hospitals. Included on the program are the following out of state speakers:

Dr. Robert M. Zollinger, Boston, Surgical Aspects of Peptic Ulcer.
Dr. William C. Quinby, Boston, Clinical Aspects of Testicular Tumors.
Dr. Varaztad H. Kazanjian, Boston, First Aid Treatment of Injuries of the Face and Jaws.
Dr. Herbert M. Elder, Montreal, Diagnosis and Treatment of Peripheral Vascular Disease.
Dr. Israel M. Rabinowitch, Montreal, Diabetic Coma.
Dr. Alvah H. Gordon, Montreal, Diagnosis of Diseases with Coincident Enlargement of the Liver and Spleen.
Dr. Richard M. Smith, Boston, Do We Consider the Child as a Whole?
Cleophas P. Bonin, D.M.D., Boston, Pediatric Significance of Malocclusion.
Dr. John R. Richardson, Boston, Nasal Airways.
Dr. Clarence E. Bird, Louisville, Ky., Physiology, Pathology and Treatment of Diseases of the Esophagus.

The annual dinner will be addressed by Samuel T. Arnold, Ph.D., dean of Brown University, and John C. Cosseboom.

SOUTH CAROLINA

Historical Commission Appointed.—A commission has been organized in South Carolina to gather, preserve and publish when possible material on the history of the South Carolina Medical Association. Members are Drs. Robert E. Seibels, Columbia; Hillyer Rudisill Jr., Charleston; Linnaeus C. Shecut, Orangeburg; Daniel Lesene Smith, Spartanburg, and Joseph I. Waring, Charleston, who is chairman. The appointment of the commission was approved at the annual meeting of the state association in 1937.

Public Health Meeting.—The South Carolina Public Health Association will hold its annual meeting at Myrtle Beach May 23-25, with headquarters at the Seaside Inn and conferences at the Gloria Theater. Dr. William K. Fishburne, health officer of Berkeley County, Moncks Corner, is president. The out of state speakers include Drs. Arthur T. McCormack, Louisville, Ky., Knox E. Miller, senior surgeon, U. S. Public Health Service, John A. Ferrell of the International Health Division, Rockefeller Foundation, New York, and Milton J. Rosenau, Chapel Hill, N. C. Other speakers will include:

Dr. William Weston Sr., Columbia, Food as a Public Health Factor.
Dr. William Atmar Smith, Charleston, The Public Health Aspect of Collapse Therapy in Tuberculosis.
Dr. Edgar A. Hines, Seneca, The Trend of Public Health Activities in Pediatric Practice.
Dr. Robert Wilson, dean, Medical College of the State of South Carolina, Charleston, General Practice and Its Relation to Public Health.

TENNESSEE

Medicomilitary Training Course.—Vanderbilt University School of Medicine, Nashville, will conduct a medicomilitary inactive duty training course for medical reserve officers of the U. S. Army and Navy in conjunction with its commencement clinic, June 6-7. The course will combine graduate work with a conference on medicomilitary problems. Enrollment is open to all reserve officers of the medical department of the army and navy and to medical officers of the National Guard.

UTAH

Personal.—Dr. Wendell Noall has been appointed health officer of Ogden, succeeding Dr. Wilburn J. Wilson.

Society News.—Dr. Ray T. Woolsey, Salt Lake City, addressed the Central Utah Medical Society at Salina April 6 on "Obstetrical Problems and the Cesarean Section."—At a meeting of the Weber County Medical Society recently Dr. June P. McBride discussed diseases of the retina and Howard K. Belnap, Ogden, cryptitis and its relation to fissure rectal abscess, fistula rectal abscess and fistula formation.

WISCONSIN

Dr. Harper Honored.—Dr. Cornelius A. Harper, Madison, has completed thirty-four years as state health officer, making him the senior public health official in the United States in point of unbroken service. A testimonial dinner was held in his honor April 1 by his department personnel and on April 10 he with others was honored at the Conference of State and Provincial Health Authorities of North America for having completed more than twenty-five years in public service. A native of Wisconsin, Dr. Harper graduated in medicine at Columbian University, now George Washington University School of Medicine, Washington, D. C., in 1893. He was appointed to the state board of health in 1902 and became

administrative head in 1904. He was president of the State and Provincial Health Officers of North America in 1908 and of the Wisconsin State Medical Society in 1930. He was a member of the state legislature in 1911.

Society News.—Dr. Raymond W. McNealy, Chicago, was the guest speaker before the Medical Society of Milwaukee County April 8 on "Medical and Surgical Treatment of Duodenal Ulcer."—Drs. Samuel Wick and Herbert J. Apfelberg, Wauwatosa, addressed the Milwaukee Neuro-Psychiatric Society March 24 on "Treatment of Schizophrenia with Insulin and Metrazol" and "Korsakoff's Psychosis" respectively.—Drs. Henry A. Sincock and Charles W. Giesen, Superior, addressed the Barron-Washburn-Sawyer-Burnett Counties Medical Society in March on "Prevention of Disease in Children Under One Year of Age" and "Diagnosis and Treatment of Common Skin Diseases" respectively.

GENERAL

Society News.—The American Association of Medical Social Workers will hold its national conference in Seattle, June 26-July 2.—Dr. Jon N. Kelly, La Porte, Ind., was elected president of the Northern Tri-State Medical Association at its annual meeting in Findlay, Ohio, April 12. Dr. Robert H. Elrod, Toledo, Ohio, was made vice president and Donald R. Brasie, Flint, Mich., secretary. Next year's meeting will be in South Bend, Ind.

Officers of Biological Societies.—At the annual meeting of the Federation of American Societies for Experimental Biology in Baltimore March 30-April 2, officers of the societies were elected as follows:

American Society of Biological Chemists: Glenn E. Cullen, Ph.D., Cincinnati, president, and Charles G. King, Ph.D., Pittsburgh, secretary.
American Physiological Society: Dr. Walter E. Garrey, Nashville, Tenn., president, and Dr. Andrew C. Ivy, Chicago, secretary.
American Society for Pharmacology and Experimental Therapeutics: Dr. Arthur L. Tatum, Madison, Wis., president, and Dr. Gustave Philip Grabfield, Boston, secretary.
American Society for Experimental Pathology: Dr. Charles Phillip Miller, Chicago, president, and Dr. Paul R. Cannon, Chicago, secretary.

The next meeting will be in Toronto, Canada, in March 1939.

Examinations in Obstetrics and Gynecology.—The oral, clinical and pathologic examinations for group A and group B applicants will be held by the American Board of Obstetrics and Gynecology in San Francisco June 13-14. An informal dinner for diplomates will be held Wednesday evening June 15 at the Palace Hotel, with Dr. William D. Cutter, secretary of the Council on Medical Education and Hospitals of the American Medical Association, Chicago, as the speaker. Tickets at \$2.25 each may be obtained in advance from Dr. Joseph L. Baer, 104 South Michigan Avenue, Chicago, or at the door. Application blanks and other information may be obtained from Dr. Paul Titus, secretary of the board, 1015 Highland Avenue, Pittsburgh.

Meeting on Industrial Medicine.—The twenty-third annual meeting of the American Association of Industrial Physicians and Surgeons and the second annual Midwest Conference on Occupational Diseases will be held at the Palmer House June 6-9. The following, among others, will speak:

J. J. Bloomfield, P. A. sanitary engineer, and Richard T. Page, associate public health engineer, division of industrial hygiene, U. S. Public Health Service, Washington, D. C., Estimation of Potential Health Hazards and Their Control.
Wallace Waterfall, director of research engineering, the Celotex Corporation, Chicago, Noise in Industry.
Oliver G. Browne, general claims attorney, New York Central System, New York, Developments in Occupational Disease Legislation.
Voyta Wrabetz, chairman, Industrial Commission of Wisconsin, Madison, Wis., The Employability of the Silicotic.
Dr. Hart E. Fisher, medical director, Chicago Rapid Transit, Chicago, Hazards of Night Driving.

The Chicago Regional Fracture Committee, American College of Surgeons, will present a symposium Thursday afternoon, with the following speakers:

Dr. Kellogg Speed, Chicago, Fractures of the Carpal Navicular Bone.
Dr. Paul B. Magnuson, Chicago, Prevention versus Cure in Deformity Following Fracture.
Dr. Dean L. Rider, Riverside, Ill., March Foot.
Dr. Willis J. Potts, Oak Park, Ill., Treatment of Fractures of the Neck of the Femur by Pinning.
Dr. Hugh McKenna, Chicago, Treatment of Fractures of the Neck of the Femur.

Boston Wins in Health Conservation Contest.—The Chamber of Commerce of the United States in cooperation with the American Public Health Association has designated Boston as the winner in the city health conservation contest among cities with a population of more than 500,000. Additional awards in this group went to Cleveland and Pittsburgh. There were 263 entries in the 1937 contest and the awards are given to those cities which, in the opinion of a committee of health experts, have during the past year dealt most effectively

with their local health problems. Activities considered in judging the contest include safety of water supply, satisfactory sewage disposal, adequate supervision of milk supply, planned medical and nursing service for mothers and infants, and safeguarding the community by recognized preventive measures, with special emphasis on school health and control of tuberculosis and venereal disease.

Announce Establishment of New Board of Anesthesiology.—The American Board of Anesthesiology has been organized as an affiliate of the American Board of Surgery in response to many requests to establish official recognition of physicians competent to practice and teach anesthesiology as a specialty. The affiliation was approved by the Advisory Board for Medical Specialties in February 1938. Cooperating societies include the Section on Surgery of the American Medical Association, American Society of Anesthetists, Inc., and the American Society of Regional Anesthesia, Inc. The term of membership on the new board will be six years. Present members are Drs. Thomas Drysdale Buchanan, New York, president; Henry S. Ruth, Philadelphia, vice president; Paul M. Wood, New York, secretary-treasurer; John S. Lundy, Rochester, Minn.; Emery A. Rovenstine, New York; Harry Boyd Stewart, Tulsa, Okla.; Ralph M. Tovell, Hartford, Conn.; Ralph M. Waters, Madison, and Philip D. Woodbridge, Boston. Two groups of candidates are recognized for qualification by the board: those who have already amply demonstrated their fitness as trained specialists in anesthesiology, the Founders' Group, and those who, having met the general and special requirements exacted by the board successfully pass its qualifying examination. The Founders' Group, on invitation by the board, may be chosen from (1) professors and associate professors of anesthesia in approved medical schools in the United States and Canada, (2) those who for fifteen years prior to the board's organization have limited their practice to anesthesiology, and (3) those who hold the certificate of fellowship in the American Society of Anesthetists, Inc. All applications for the Founders' Group must be received by Jan. 1, 1939. No candidate will be considered after that date. Requirements for those to be qualified by examination will be: 1. Graduation from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association or graduation from an approved foreign school. 2. Completion of an internship of not less than one year in a hospital approved by the Council or its equivalent in the opinion of the board. 3. Special training: A further period of graduate work of not less than three years devoted to anesthesiology taken in a recognized graduate school of medicine or in a hospital or under the sponsorship accredited by the American Board of Anesthesiology for the training of anesthetists. The period of training shall be of such character that the relation of the basic sciences to anesthesiology shall be emphasized. Adequate clinical experience in which the candidate has assumed the whole responsibility will be required. An additional period of not less than three years of study or practice limited to anesthesiology. 4. The candidate must present to the board sufficient evidence of good moral character and that he has limited his practice to anesthesiology as a specialty and that he intends to be so engaged.

The qualifying examination will be divided into two parts: Part I will consist of a written examination covering such topics as anatomy, biochemistry, physiology, pharmacology, physical diagnosis, therapeutics, pathology and public health, in relation to anesthesiology. Part II, oral and practical, may cover similar topics, and, in addition, such questions on physics and mechanics as are important in anesthesiology, especially dealing with electrical theories and the proper handling of high pressure gases and inflammable agents. The practical examination will consist of actual observation of clinical work in the applicant's own operating theater when possible, and it may consist of cadaver demonstrations of regional blocks, sites for alcohol injection, and procedures for resuscitation or inhalation therapy and clinical experimentation.

The fee for Group A, Founders' Group, shall be \$25. The fee for Group B shall be \$50, payable \$25 on application, which shall be returned if the candidate is not accepted for examination, and \$25 on taking the examination. Reexamination within two years may be had if necessary without additional fee. Once a candidate has become qualified he will have no further financial obligation to the board.

The board postponed its first examination (part I, written), which was scheduled for July 1938. Part I and part II will be held in New York City October 21. Requests for booklets of information and application blanks should be addressed to the secretary, Dr. Paul M. Wood, 745 Fifth Avenue, New York.

Foreign Letters

LONDON

(From Our Regular Correspondent)

April 23, 1938.

A General Medical Service for the Nation

The present national health insurance applies only to employed persons and is compulsory for all whose income is below \$1,250. It does not apply to the dependents of the employed or to workers of similar social standing who are not employed by any one. The council of the British Medical Association has brought forward a scheme for extending health insurance to the whole population. "There should," it says, "be provided for every individual the services of a general practitioner or family doctor." Though so worded it is probably not meant that every person should be compelled to join but only, as at present, those below a certain income level. The effect would be to double the number of the insured. The present system provides only a general practitioner service as a matter of course, though there are other medical benefits, which are contingent. As to how the scheme is to be financed, nothing is said. The present scheme is financed jointly by contributions from employers, the employed and the state. The council states that there exists a plethora of health services, better than those in any other country, but established in piecemeal more or less haphazard fashion, with consequent overlapping and unnecessary complication and also large gaps. Locally there are now two systems of medical provision, one under the insurance committees, the other under the local authorities, which are largely independent. The former provide a general practitioner service for 19,000,000 persons. The latter provide an environmental health service, a general practitioner service for the destitute, a school medical service, a maternity service based mainly on attendance by midwives, supervision of mental defectives, clinics for infant welfare, early mental disorders, venereal diseases and tuberculosis, consultants and specialists for certain purposes, and general and special hospitals. In addition certain voluntary bodies, such as those concerned with infant welfare and public health, render service.

The council considers that any general medical service for the nation should include, in addition to the environmental health and sanitary service, a general practitioner service, nursing, massage and physical medicine, dental and ophthalmic services, a maternity service, a consultant, specialist and laboratory service, and an institutional service. The council proposes that the existing insurance system shall be extended to the dependents of the present insured, those receiving domiciliary medical attendance through public assistance machinery, and others of similar economic status to the present insured though not under a "contract service." In association with the general practitioner service should be provided certain auxiliary services of lay persons, such as pharmacists, nurses, masseuses and biophysical assistants. Similarly there would be dental and ophthalmic benefits for all the insured and not, as now, "additional benefits" for some. Under the existing scheme all insured persons have a general practitioner service and a cash benefit in respect to maternity. Many, but not all, the insured have additional treatment benefits, depending on the funds of their societies. These are payments in respect to dental and ophthalmic treatment, convalescent home treatment, medical and surgical appliances and, to a much smaller extent, hospital accommodation. In the view of the medical profession, full dental and ophthalmic benefit should be provided as part of the insurance service. Specialist services in tuberculosis, in venereal and infectious diseases and in laboratory examinations are already provided by local authorities. It is proposed that

the consultant and specialist service should be comprehensive in all branches and should be available only through the general practitioner.

The maternity service should include (1) antepartum care by or under the responsibility of a medical practitioner chosen by the patient, throughout pregnancy; (2) attendance by a certified midwife during the antepartum period, labor and the puerperal period; (3) attendance by the practitioner when necessary; (4) at least one postpartum consultation with the practitioner; (5) a second practitioner when necessary, as for administration of an anesthetic; (6) a consultant when necessary; (7) a laboratory service; (8) beds for persons requiring institutional treatment; (9) sterilized obstetric dressings; (10) ambulance facilities for patients requiring removal to institutions, and (11) women trained in domestic work, who would relieve the mother during the lying-in period.

The Spread of Streptococcic Infection as Ascertained by Type Determination

At the Society of Medical Officers of Health a discussion on infections was introduced by Dr. V. D. Allison of the Ministry of Health Pathological Laboratory. The main value of type determination in infections due to *Streptococcus pyogenes* was in (1) investigating the sources and paths of infection in explosive outbreaks of streptococcic infection, such as those due to milk, and outbreaks of puerperal fever in maternity hospitals, and (2) investigating the paths of infection in the wards of general and fever hospitals, and the effects of reinfection and cross infection in producing grave complications.

His investigations in scarlet fever wards had shown the following: 1. Patients nursed throughout their illness in cubicles or chambers show no change of the serologic type of the infecting streptococcus. Segregation of patients in small wards according to the serologic type of the infecting streptococcus showed that if a change of type did occur it was due to introduction of fresh infection by a member of the staff. 2. Infection with one serologic type of *Str. pyogenes* does not necessarily protect a patient against infection with another type. 3. The so-called relapse in scarlet fever is due to fresh infection with a streptococcus conveyed by another patient in the ward and differing in serologic type from that causing the primary infection. 4. In multiple bed wards for scarlet fever from 50 to 70 per cent of the patients become reinfected with one or more fresh types of *Str. pyogenes* during their stay in the hospital. 5. Such reinfection may be latent or manifest. 6. Complications in scarlet fever during the third week and subsequently in multiple bed wards are usually caused by reinfecting types of *Str. pyogenes*.

Dr. Allison gave experimental proofs of spread of infection by direct and indirect contact and pointed out the importance of infected toys, handkerchiefs and eating utensils as vehicles of infection. Air-borne infection by droplets was well recognized, but the part played by particles of dust, in which *Str. pyogenes* could survive for a considerable time, was only beginning to be recognized. The problem of the spread of streptococcic infection was of equal importance in measles wards and in the wards of general hospitals.

Dr. R. Cruickshank referred to air-borne infection (not droplet or spray infection). Recent epidemiologic and bacteriologic work suggested that infection—and not only respiratory tract infection—was spread in spite of rigid precautions to prevent transference manually by fomites or by carriers. Droplets did not always fall immediately to the ground within a few feet of the individual. If not more than 0.1 mm. in diameter, evaporation rapidly reduced them to such a small size that they remained suspended in the air like particles of smoke. Larger droplets which had settled might also evaporate and be lifted into the air again as dust. Wells showed that certain organisms which commonly occurred in the upper respira-

tory tract—hemolytic streptococci, pneumococci and diphtheria bacilli—remained viable in the atmosphere for two days. Dr. Cruickshank found that in eight cases of burns in a ward infection with the same type of *Str. pyogenes*, which he cultivated from the dust, was present. In a small outbreak of puerperal sepsis he found *Str. pyogenes* in the atmosphere of the ward. In a diphtheria ward of young children streptococcal infections (tonsillitis, otitis media and vaginitis) occurred. Streptococci of the two infecting types were found on plates exposed in the ward and were more numerous where the infected patients were.

Fatal Case of Psittacosis at the Zoological Gardens

After an absence of psittacosis from this country for some years a case has occurred at the London Zoological Gardens. An attendant, aged 41, died from the disease, which he contracted in the course of his employment. At the inquest it was stated that he was supposed to be suffering from typhoid, but by injecting material from some of the organs into mice Prof. S. P. Bedson produced psittacosis in them. Mr. D. S. Smith, curator of birds and mammals at the Zoological Gardens, said that this was the first case in their more than one hundred years' history. It originated in a consignment of parrots brought from South America and the West Indies by Lord Moyne. As was customary, the birds were all kept in the sanatorium for a week or two. They had never been on exhibition to the public, and the whole consignment was destroyed as a precaution. The jury added to their verdict the statement that they were satisfied that every precaution had been taken by the authorities of the Zoological Gardens.

PARIS

(From Our Regular Correspondent)

April 23, 1938.

Complicated Tax System for French Physicians

Every physician and dentist in France is obliged to pay an income tax, a personal property tax and a third type of tax known as the "patente" or license to practice. A physician or dentist must keep a separate ledger in which the name of each patient and the amount paid for services are recorded daily. Instead of inscribing the name of the patient, a number may be given and the fee received placed opposite the number. The tax collector has the right, if there is any question as to the net annual income, after the usual deductions for professional expenses, to inspect the record of how much was received from each patient. Such a request for inspection of the daily receipts is rarely made, but the physician or dentist who does not keep such a ledger is liable to a heavy fine.

The "patente" or license tax is based on the rental value of the space occupied for professional purposes. If the office is in the physician's or dentist's apartment, used also as living quarters, the "patente" is calculated on the rental value of such rooms as are used in the practice of medicine or dentistry. Up to a few years ago, the "patente" was levied not only on the offices used by a physician or dentist in a city like Paris but also on the rental value of any suburban or country residence. Fortunately, this double, or triple in some cases, mode of collecting the "patente" has been abolished. However, recently the question was raised as to whether a physician who spends his vacation in some country town and receives fees for services rendered during his sojourn there is liable for the payment of an additional "patente." The minister of finance, in reply to such a question, raised in parliament on January 11, replied in the affirmative: The "patente" must be paid for such vacation receipts unless the services rendered are not reimbursed.

This "patente" or annual license to practice tax constitutes in many cases a heavy additional burden which is keenly felt

in the present state of crisis here. Not only the medical and dental professions, but all "noncommercial pursuits," such as architects, engineers and accountants, must pay the "patente" tax.

Bacillus Funduliformis Infections

A number of articles have appeared in recent years in which cases of septicemia due to *B. funduliformis* were reported. This organism is strictly anaerobic and difficult to grow on mediums. At the March 29 meeting of the Académie de médecine of Paris, attention was called to the surgical aspects of *B. funduliformis* by Lemierre, Grégoire and their co-workers. The organism is constantly found in the normal digestive and urinary tracts and is apt to give rise to suppuration when perforation of the various components of these tracts occurs. The majority of reports of infection due to this organism are those of cases of tonsillitis and peritonsillar abscess and of otitis and mastoiditis. It is important for surgeons to be cognizant of the existence of bacteremias caused by *B. funduliformis*. In the clinical picture, the triad of symptoms (a) severe and prolonged chills followed by high temperatures, (b) pulmonary infarcts complicated by empyema and (c) arthritis, often suppurative, dominates.

To prevent spread of the infection from the most frequent primary foci in the pharynx and ear, attempts have been made to ligate the internal jugular vein, but this has not been successful in most cases.

An empyema which is a sequel of a generalized *B. funduliformis* infection should be operated on as soon as possible after the diagnosis of such a complication has been made. The *B. funduliformis* empyema shows a tendency to rupture into the bronchi and is often the only clinically demonstrable localization of the bacteremia. The metastatic osteo-articular foci also call for early intervention because of a similar tendency to perforate the joint capsule and invade the periarticular tissues. In one case, even though arthrotomy was performed on one shoulder and two elbow joints, the patient died. In another patient a suppurative arthritis had perforated the acetabulum and invaded the pelvic tissues. In spite of good drainage this patient died. In both of these cases, a large number of septic infarcts were found in the lungs at necropsy. Localization of the infection in the sacro-iliac joint is common. The termination in these cases of *B. funduliformis* bacteremia is not always fatal. The clinical course may be short without any localization calling for surgical intervention, or the latter may result in recovery, as in some cases in which an early diagnosis of such a localization has been made.

Lesions of Ulnar Nerve in Supracondyloid Fractures

At the March 16 meeting of the Académie de chirurgie of Paris, a paper was read by Prof. E. Sorrel and Dr. Sorrel-Déjerine in which twenty-one instances of injury to nerves following fracture of the lower end of the humerus were reported. In fifteen cases the ulnar nerve was involved; in one, the radial and in two, the median. Seven of the first named complicated a transverse supracondyloid fracture of the humerus. Such paralyses are relatively rare, according to the literature. The authors' seven cases occurred in a total of 207 transverse supracondyloid fractures, so that the incidence of paralysis of the ulnar nerve may be considered to be about 7 per cent.

Among these 207 cases, injury of the ulnar nerve was never observed in 184 of the type termed "extension fractures" by Kocher. In this type, the lower fragment is displaced behind the shaft, whereas in the "flexion" type the lower fragment is displaced in front of the shaft of the humerus. All seven cases of ulnar paralysis occurred in this second or flexion type.

of fracture, so that the incidence is 30 per cent, the nerve being caught between the two fragments, the epiphysis and the shaft.

The symptoms of paralysis of the ulnar nerve are not very evident during the first few days after the injury. Often the paralysis is an incomplete one, the entire nerve not being involved. In only two of the seven cases reported by the authors was paralysis complete. It is important to make an early diagnosis of a nerve injury; hence the signs of such an involvement should be looked for in all supracondyloid fractures of the humerus in children. In three cases, injury to the nerve was recognized only following removal of the cast. Aside from the evidence of motor and sensory paralysis, vasomotor disturbances, such as marked dryness of the skin, are important objective signs. If the nerve injury is recognized early, the prospect of complete recovery is good. In one case, the nerve was found crushed between two fragments at the time of operation two days after the injury; nevertheless complete recovery was noted seven months later. In another child, the nerve was not found crushed but simply stretched over a fragment four months after the injury. Recovery following operation took place in much shorter time (three weeks) than in the preceding case.

If evidences of compression of the ulnar nerve are present but a good nonoperative reduction has been effected, it is safe to wait two weeks, but no longer, before operating, to see whether reduction of the fracture has succeeded in releasing compression of the nerve. If, however, the reduction is unsatisfactory, it is advisable to operate immediately.

Dedication of Monument in Memory of Professor Calmette

The city in which the late Professor Calmette was born has honored his memory by the erection of a monument, which was unveiled at Nice, April 8. The work depicts a nurse administering the BCG vaccine to an infant, which she holds in her arms. On the side of the monument is a plaque of the distinguished bacteriologist, who during the last years of his activity at the Pasteur Institute of Paris devoted his energies to the prevention of tuberculosis in the newborn by means of the BCG vaccine.

BERLIN

(From Our Regular Correspondent)

March 28, 1938.

The Survival of Prematurely Born Infants

"Prematurely born" is the term applied to infants whose weight at birth is less than 2,500 Gm. It has been deemed necessary to determine whether survivors of this group would grow up to be burdens on their families and on society. Professor de Rudder, ordinarius in pediatrics at Frankfurt, undertook to solve this problem. Since evaluation also of mental development is of prime importance, children of school age were selected for investigation. That his material would be representative, the author limited his choice to children whose weights at birth had been from 1,000 to 1,700 Gm. This weight level approximates from one third to one half the neonatal weight of a baby born at term.

De Rudder established that the mortality among "tiny prematures," babies whose weight at birth is 1,700 Gm. or less, during the first months of life was extremely high despite the best of hospital care. Some 75 per cent of these babies die of general debility, injuries received during births, and so on. The author was able to make follow-up examinations of twenty-seven children from 6 to 17 years of age who had been "tiny prematures." Nearly all these children had spent their earliest infancy in the Frankfurt Children's Hospital; consequently, precise data relative to that period were available. He found that the physical development of these children with respect

to height and weight corresponded completely with the norm for their respective ages. This conformity has been noted by other investigators. In no instance was any defect such as a crippled condition of any sort or spasmophilia observed which could be referred to premature birth. Evaluation of mental development was based on various criteria: social environment, data supplied by relatives, impressions conveyed during medical examination, intelligence tests, and direct questioning of the teachers. Of the twenty-seven children only one was manifestly feeble-minded and four attended special schools for backward children. The remaining twenty-two children attended regular school and were rated as average and in some instances as superior pupils. Rather deficient powers of concentration, inattention and slight mental fatigability were a few peculiarities repeatedly evidenced by these children. The prognosis for the children investigated is favorable and the question as to the survival value of "tiny prematures" can without reservation be answered in the affirmative.

AUSTRALIA

(From Our Regular Correspondent)

March 29, 1938.

Infant Mortality in South Australia

The statistical register of the state of South Australia for 1936-1937 shows that although the 589,000 inhabitants enjoy good health, judging by their death rate and longevity, and although in 1936 their infant mortality rate was equal to the lowest in the world, their birth rate is consistently the lowest of the Australian states and in 1936 was only 15 per thousand. South Australia has the lowest death rate in the commonwealth (a standardized rate of less than 8 per thousand), an expectation of life at birth of 65 years, and an infant mortality rate of 31 deaths per thousand live births. In 1915, 117,409 women of child bearing ages produced nearly 12,000 children; in 1935, 156,940 women gave birth to a little more than 8,000. The result is that at the census of 1933 there were 8,762 less children under 5 years of age than there were at the census taken twelve years earlier, and in the latest year the population has increased by less than 3,000. This is an odd position for a young country and a discouraging outlook. The low fertility, but not the low mortality, may be explained by the fact that rather more than half the population lives in and around Adelaide, that only a fourth are engaged in agriculture, that nearly a fourth of the wage-earning group were unemployed at the census of 1933, and that nearly 60 per cent of the male breadwinners had to live on an income of less than £2 per week. With such low figures for infant mortality it is interesting to consider how far this rate may eventually fall and whether there is some irreducible minimum below which it is not possible to go. In South Australia the rate has declined from 92 deaths per thousand live births in 1900-1904 to 31 in 1936. In the metropolitan area the latest rate is 35. It is the neonatal rate that is specially recalcitrant, but even at this stage of life improvement is clearly possible and is, in fact, taking place. In the latest years a third of the total mortality under one year of age was attributed to premature birth, 15 per cent to malformations, about 8 or 9 per cent each to congenital debility and injury at birth, 10 per cent to pneumonia, and only 3.5 per cent to diarrhea and enteritis. These figures show the direction that efforts for the saving of infant life must take and suggest that a considerable reduction of the world's record is still possible.

MATERNAL NUTRITION AND NEONATAL DEATHS

Dr. Jefferis Turner, director of infant welfare in Queensland, has drawn attention to the decrease in neonatal mortality following on adequate maternal nutrition. The infant mortality rates in Queensland and South Australia used to be equal. Since 1931, however, the rate in South Australia has been lower and was much lower in 1936, when it reached to within one

decimal point of the New Zealand rate, the lowest in the world. To explain this difference, a comparison was made of the mortality rates for the first month and for the next eleven months of the two states. Of the deaths during the first month, 86 per cent occurred during the first week. All were due to what have been classified as antenatal causes. In the years 1934-1936 the mortality rate in Queensland during the eleven months following the first month has been consistently lower than in South Australia. As infants are rarely brought to child welfare centers during the first week (in which about 86 per cent of this mortality occurs), the lower mortality rates during the first month in South Australia in comparison with Queensland cannot be due to the work of these centers. There is no reason to think that the management at birth is greatly superior in South Australia, so that neonatal or first month mortality can have been reduced only by improved health of the mothers. The facts point to better nutrition as the real cause. The last seven years have been years of economic depression and unemployment and it is the unemployed people who are most exposed to the dangers of malnutrition. In Queensland, the most important cause of malnutrition among women is the deficiency of milk in their diet. Much of this is due to want of knowledge but is aggravated by economic stringency. In South Australia during the "depression," the government adopted the policy of supplying milk rations to the families of the unemployed. Distribution of milk to children and mothers commenced in 1930. In 1935 the South Australian government, on the advice of a committee of the British Medical Association, added to the rations distributed one pint of milk daily to every child up to 6 years of age, half a pint to children between 6 and 13 years, and one and a half pints to expectant and nursing mothers. The milk ration is issued to every mother on production of a medical certificate of pregnancy and evidence that she is in economic need. In Dr. Turner's opinion, the addition of milk to other rations is an adequate explanation of the difference in neonatal mortality rates.

A New Virus Disease

Investigations following the occurrence of a number of cases of fever among workers in a large meatworks in Brisbane have shown that there is in Queensland a fever entity of a type not previously differentiated. It has been provisionally named Q fever. It has certain resemblances to typhus, which in several forms is endemic in Queensland, but is distinguished from it by the absence of a characteristic rash and by the negative response to the Weil-Felix test. Dr. E. H. Derrick of Brisbane has reported these research studies. The onset is acute, the first complaints being malaise, anorexia, headache, pains in the back and limbs, and fever, rising rapidly and remaining usually between 102 and 104 F. Two types may be distinguished. In some cases there is a rapid subsidence after six to nine days; in others the course is protracted to the third or fourth week and the fall of temperature is gradual. The most striking symptom is severe and persistent headache. The pulse rate at the beginning of the illness in comparison with the height of the fever is slow. None of the cases so far have been fatal. Guinea pigs are susceptible to infection from blood or urine from human patients or from blood or organ emulsion from infected laboratory animals. Infected guinea pigs show an incubation period of from two to eighteen days, followed by a fever of from four to six days' duration. Occasionally the infection is inapparent but may be shown to have occurred by the fact that blood or tissues about two weeks after inoculation transmit the infection and that the animal is found afterward to be immune. The infecting agent of Q fever is present in the blood of human patients during the fever period and may be present in the urine in later stages. It is also present in the blood and liver of infected guinea pigs and minute amounts of these will transmit the infection to other guinea pigs. The virus contained in a

liver emulsion may maintain its power to infect for several months if kept in the refrigerator at a temperature of about 5 C., the loss of potency being gradual. Despite considerable work, the epidemiology of Q fever remains obscure. There is no obvious relation to the season. Most of the cases occurred in meat workers or dairy farmers. Attempts to infect in ways other than by subcutaneous or intraperitoneal injection have not been successful, and it has been shown that ingestion of infected tissues could not be the method of natural spread of the fever. The abundance of the virus in the blood, and the ease with which the disease may be transmitted by injection, render it likely that some blood-sucking vector is responsible for the natural transmission and that there is a reservoir of infection in some animal. Attempts to find such a reservoir have so far failed.

EXPERIMENTAL STUDIES

On the hypothesis that a filtrable virus was responsible for the febrile reaction in guinea pigs, studies were made at the Walter and Eliza Hall Institute, Melbourne. No characteristic changes were found in the organs of the infected guinea pigs. Attempts to cultivate bacteria or *Leptospira*, and appropriate microscopic examinations for *Leptospira* were without result. The virus produces characteristic pathogenic effects on monkeys and mice and an inapparent infection in albino rats. The virus survives but does not produce characteristic lesions on the chorio-allantois of the developing egg. It is filtrable with difficulty through relatively permeable (0.7 micron) gradocol membranes. Mice inoculated intraperitoneally show enlargement of the spleen and liver with characteristic microscopic changes. Smears from the cut surface of the spleen, suitably stained, show the presence in variable numbers of intracellularly situated bodies which appear to be typical Rickettsiae. A satisfactory method of staining the organisms has not been obtained, but in smears stained by Castaneda's method the organisms take the form of tiny rods less than 1 micron in length and about 0.3 micron across; the shape varies from well marked rods to coccoid forms indistinguishable from those of psittacosis. Most of them appear blue but paler than psittacosis bodies, and in many clumps a large proportion of the Rickettsiae are pink. A proportion is usually found extracellular but the appearances suggest that all are initially intracellular, where they give rise to cytoplasmic microcolonies, sometimes relatively sharply defined, at other times with a fairly diffuse distribution of Rickettsiae through the cytoplasm. Except that the majority of the bodies are rod shaped, the general appearance of a smear is similar to that obtained from psittacosis-infected spleens. The accumulations range from about 3 to 12 microns in diameter and are usually sharply circumscribed with an oval or circular outline. The Rickettsiae were found in mouse spleen and liver in practically every instance when the tissues were infective and never in control mice treated in various ways. Typical Q fever Rickettsiae have been found in the spleens of mice inoculated with blood taken from a patient in the early stages of the disease, so that there is strong evidence to suggest that Q fever is Rickettsiae. Agglutination of semipurified Rickettsia suspensions from infected mouse tissues by immune human, monkey and guinea pig serums has been observed. Such suspensions are agglutinated to variable titer by serum taken from patients from ten to fifteen days after the onset of symptoms. The test is specific for Q fever infections and is a useful diagnostic method. No further information on the relation of the Q fever Rickettsiae to the classic forms is available. The absence of agglutination by a serum of known high content in X 19 agglutinins is a further indication that the condition bears no relation to typhus. There are some resemblances between the pathology of psittacosis infection in the mouse and that of Q fever, and Lillie in 1930 considered that the virus of psittacosis should be regarded as a Rickettsia. For these reasons limited cross immunity experiments were carried out. Mice immune

to Q fever were inoculated with an active strain of psittacosis and died with typical postmortem signs in the same time as control mice of the same age. It is considered that the Rickettsiae and the disease they cause are distinct from any previously described, but direct immunologic comparison with the various spotted fever (tick-borne) types will be necessary before this can be finally stated.

Possible Influx of European Practitioners into Australia

Toward the end of last year the question arose in Australia of the danger of an invasion on medical practice by foreign graduates. Recent legislation enacted in Tasmania requires any person applying for registration to be in the possession of a qualification obtained in a country which has reciprocity with Tasmania. It is also necessary that the whole of the course of study entitling the holder to his diploma should have been carried out in the country granting the qualification. The passing of legislation similar to this in states other than Tasmania would not remedy the matter, as a person who had, for example, done half his course of study in Melbourne and half in Sidney would not be eligible for registration in Tasmania. At the last meeting of the federal council of the British Medical Association it was resolved that a committee should be appointed to draft a clause which would be suitable for all states.

Trachoma in Western Queensland

Eye diseases have a high incidence among the children of Western Queensland and are a big factor in the conquest and control of the less fertile inland areas. Queensland, with its long western frontier against the inland desert country, where dust, dirt and flies combine to render the eyes susceptible, requires special provisions for the fight against trachoma. The state government, through the officers of the school medical service, seeks out affected children in western schools and homes, and, with the parent's consent, arranges for them to be brought to Brisbane, where they receive treatment for their eyes, together with school work specially suited to the individual capacity of each child, and additional training in domestic science for the girls and manual work for the boys. The results so far obtained have been encouraging. Almost every one of the 200 children who have passed through a special ophthalmic hostel since its foundation nine years ago have been cured of trachoma. After an average stay of eighteen months the children are sent back to their homes able to fulfil their normal life in the community. The expenditure of £30,000 on rebuilding the hostel is considered not large in view of the work it is doing. Provision for sixty-four children is none too great, for the director of school medical services and the ophthalmic surgeon in attendance, both of whom have wide knowledge of the actual conditions in the west, are of the opinion that trachoma is still very prevalent and that, if all the children who require treatment could have such advantages as those which they enjoy in the ophthalmic hostel in Brisbane, trachoma would soon cease to exist in the western districts of Queensland.

Hospital Treatment of Scarlet Fever

Contending that scarlet fever is only one of a number of streptococcal infections, Dr. F. V. Scholes of Melbourne asks why it is deemed necessary to notify, isolate and treat all cases of scarlet fever while the majority of all cases of infection by hemolytic streptococci can be ignored with regard to notification and isolation. Scarlet fever is merely the manifestation of certain symptoms in certain subjects. In others who are equally infectious the syndrome is absent, and they are therefore not suffering from scarlet fever in the strict sense of the term. Epidemics of sickness characterized by follicular tonsillitis, with or without otitis media, by nephritis and by cervical adenitis do not differ essentially from epidemics of scarlet fever. Tonsillitis in one member of a household is often followed by scarlet

fever in another and possibly otitis or nephritis in a third. The same streptococcus has caused all of them and the symptoms of scarlet fever are merely a result in a particular individual. Dr. Scholes suggests that cases of acute tonsillitis and otitis should be investigated bacteriologically just as are cases of scarlet fever and diphtheria and that, if practicable, isolation and treatment should be carried out at home but that, if this cannot be done, the patients should be received in a hospital. All common types of scarlet fever have been found capable of causing scarlet fever, given the proper person. A population of scarlet fever patients, therefore, brought from different localities and aggregated in a fever hospital will be found on admission to be infected with differing strains or types of streptococci. To control direct transmission also Dr. Scholes urges individual isolation of patients until typed, either in cubicles or by barrier nursing in small wards; segregation of patients according to type, in wards of suitable size, according to the number of patients infected by each type (for this purpose subdivisible wards are advocated), and segregation according to type in separate convalescent wards when the walking convalescent stage is reached. By the adoption of these methods it is considered that the majority of young children with uncomplicated scarlet fever will make an uninterrupted recovery and that the state of those in whom infectivity is prolonged, now so often punctuated by a succession of complications and cross infections, will be a rare instead of a common feature.

Hydatid Disease in Australasia

Australia and New Zealand are the only English speaking countries in which hydatid disease is common. The large number of sheep, cattle and dogs give rise to a favorable milieu for the spread of hydatid disease. Two years ago the nucleus of a department for hydatid disease research and prevention was instituted at the New Zealand Medical School under the direction of Dr. C. E. Hercus, professor of public health, Dr. E. F. D'Ath, professor of pathology, and Sir Louis Barnett, emeritus professor of surgery. In New Zealand the human incidence of the disease has increased during the past ten years. At present a reasonable estimate is that from 100 to 150 cases out of a population of 1,500,000 occur every year, and the mortality rate is about 15 per cent. Argentina and Uruguay, important competitors with us in pastoral pursuits, are much more heavily infested. New Zealand has been carrying on a vigorous campaign for the prevention of hydatid disease. Posters and folders have been widely distributed among the farming community, schools, abattoirs and freezing works.

Marriages

LOUIS ZIMMERMAN, Elmsford, N. Y., to Miss Mildred E. Choper of Woodbridge, N. J., in New York, April 11.

HERBERT HAMMOND OGBURN, Greensboro, N. C., to Miss Bobbie Gene Truesdale of Mount Holly, February 12.

JOHN MACMILLAN TOWNSEND, Birmingham, Ala., to Miss Ann Kemper of Owenton, Ky., February 5.

KENNETH L. SHAFFER, Corydon, Ind., to Miss Annabelle Nafe of Kewanna, in Lafayette, February 20.

CHARLES W. NEUHARDT, Yonkers, N. Y., to Miss Ruth T. Vogel of New Hartford, Conn., in January.

LEONARD JAY TRILLING, Paterson, N. J., to Miss Beatrice Sulzberger of New York, April 14.

ROBERT NOVAK, Brookville, Ohio, to Miss Wilda Corts of Coffeyville, Kan., in February.

CLETUS T. KEARNEY, Gridley, Ill., to Miss Helen Garm of Beardstown, February 26.

G. ROBERT MATTHEWS JR. to Miss Virginia R. Elliott, both of York, Pa., April 26.

GEORGE A. ZINDLER to Miss Florence Mary Rudell, both of Detroit, April 23.

Deaths

Paul J. Pontius * Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1891; member of the American Academy of Ophthalmology and Oto-Laryngology; fellow of the American College of Surgeons; ophthalmologist to St. Joseph's Hospital, Philadelphia, Masonic Home, Elizabethtown; consulting surgeon to the Wills Hospital; consulting ophthalmologist to the Philadelphia General and Frankford hospitals, Shriners' Hospital for Crippled Children, Philadelphia, and Grand View Hospital, Sellersville; in 1932 received the honorary degree of doctor of science from Bucknell College, Lewisburg, Pa.; aged 70; died, February 16, of carcinoma of the bladder.

Wade Hampton Frost * Baltimore; University of Virginia Department of Medicine, Charlottesville, 1903; dean of Johns Hopkins School of Hygiene and Public Health, 1931-1934, resident lecturer in epidemiology, 1919-1921, and since 1921 professor; associated with the U. S. Public Health Service from 1905 to 1929; director of the bureau of sanitary service of the American Red Cross during the World War; author of monographs in the field of sanitary science and epidemiology; aged 58; died, May 1, in the Johns Hopkins Hospital, of carcinoma of the esophagus.

Thomas William Harvey * Orange, N. J.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1878; past president of the Medical Society of New Jersey and the Essex County Medical Society; fellow of the American College of Surgeons; formerly member of the board of education; city physician, and secretary of the board of health, 1880-1884; consulting surgeon to the Orange Memorial Hospital and the New Jersey Orthopedic Hospital; aged 84; died, April 8, of arteriosclerosis.

Mildred Clark Clough * Baltimore; Johns Hopkins University School of Medicine, Baltimore, 1914; instructor in clinical medicine at her alma mater, 1916-1921; teacher of physiology, Maryland State Teachers College, 1919-1922; physician in charge, venereal disease clinic (for women), city health department, 1926-1932; co-author of the ninth edition of "Practical Bacteriology, Hematology and Animal Parasitology"; aged 49; died, March 11, of bronchopneumonia following osteomyelitis and pyelitis.

William F. Elgin * Glen Olden, Pa.; University of Maryland School of Medicine, Baltimore, 1887; director of the H. K. Mulford Vaccine Laboratory of Philadelphia from 1898 to 1929, when the company was acquired by Sharp & Dohme and he became director of the vaccine division; retired March 15, 1938; member of the Medical and Chirurgical Faculty of Maryland; author of numerous articles on the production of vaccines; aged 76; died, April 18, of bronchopneumonia and cerebral hemorrhage.

Stephen Webb Davis * Charlotte, N. C.; University of Pennsylvania School of Medicine, Philadelphia, 1927; formerly secretary of the Mecklenburg County Medical Society; served during the World War; fellow of the American College of Physicians; secretary and member of the staff of the Presbyterian Hospital; on the staffs of the Mercy Hospital and the New Charlotte Sanatorium; aged 43; died, March 16, of a self-inflicted bullet wound.

Sanford Withers * Denver; Washington University School of Medicine, St. Louis, 1919; member of the Radiological Society of North America, American College of Radiology and the American Radium Society; fellow of the American College of Physicians; served during the World War; on the staff of the Denver General Hospital; aged 46; died, March 8, in New York, of aplastic anemia and bronchopneumonia.

Ross Vernet Patterson * Philadelphia; Jefferson Medical College of Philadelphia, 1904; dean and Sutherland M. Prevost professor of therapeutics at his alma mater; past president of the Medical Society of the State of Pennsylvania and the Association of American Medical Colleges; served during the World War; received honorary degrees from several colleges; aged 60; died, May 2, in the Jefferson Hospital.

Eugene E. Tupper, Eau Claire, Wis.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905; member of the State Medical Society of Wisconsin; past president and secretary of the Eau Claire Dunn-Pepin Counties Medical Society; on the staff of the Luther Hospital; aged 67; died, February 24, of pulmonary tuberculosis and lobar pneumonia.

Paul Eaton * Jacksonville, Fla.; Western Pennsylvania Medical College, Pittsburgh, 1903; formerly associate professor of preventive medicine at the University of Georgia School of Medicine, Augusta; director of the diagnostic laboratories, state board of health; aged 62; died, February 25, in the Riverside Hospital, of heart disease, paralysis agitans and bronchopneumonia.

Elmer Ellsworth Brinckerhoff * Oakland, Calif.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1908; member of the Pacific Coast Oto-Ophthalmological Society; at various times on the staffs of the Alameda County, Providence and Peralta hospitals; aged 55; died, March 12, of chronic nephritis and pulmonary tuberculosis.

Guy Stark Saffold, Washington, D. C.; George Washington University School of Medicine, Washington, 1905; member of the Medical Society of the District of Columbia; served during the World War; formerly on the staff of the Episcopal Eye, Ear and Throat Hospital; aged 57; died, February 27, of carcinoma of the larynx.

Thomas Smith O'Connell * East Hartford, Conn.; College of Physicians and Surgeons, Baltimore, 1892; for many years member of the board of education and formerly member of the state legislature; aged 71; died, February 25, in St. Francis Hospital, Hartford, of chronic osteomyelitis of the vertebrae with abscess formation.

Charles Dalton Cleghorn, Miami, Fla.; Columbia University College of Physicians and Surgeons, New York, 1904; member of the Florida Medical Association and the Radiological Society of North America; superintendent of the Macon (Ga.) Hospital, 1916-1918; aged 59; died, March 25, of pulmonary tuberculosis.

Leslie Boyd Seaport, Cohoes, N. Y.; Albany Medical College, 1916; member of the Medical Society of the State of New York; served during the World War; aged 47; on the staff of the Cohoes Hospital, where he died, February 20, of acute perforated gangrenous appendicitis and peritonitis.

Loren Ray Weir, New Britain, Conn.; Kansas City (Mo.) Hahnemann Medical College, 1915; member of the Connecticut State Medical Society; served during the World War; on the staff of the New Britain General Hospital; aged 53; died suddenly, February 10, of acute coronary occlusion.

Frank Holmes Smith * San Bruno, Calif.; Cooper Medical College, San Francisco, 1905; past president of the San Mateo County Medical Society; aged 58; on the staff of the Mills Memorial Hospital, San Mateo, where he died in February of gunshot wounds inflicted by a patient.

Joseph H. Cooper, Tuscaloosa, Ala.; Chattanooga (Tenn.) Medical College, 1904; veteran of the Spanish-American War; aged 64; died, March 16, in the Veterans Administration Facility, Atlanta, of surgical shock following the second stage operation for suprapubic prostatectomy.

Daniel Joseph Devlin Jr., * Assistant Surgeon, U. S. Public Health Service, Reserve, New Orleans; Tulane University of Louisiana Medical Department, New Orleans, 1933; on the staff of the U. S. Marine Hospital; aged 28; died suddenly, March 14, of heart disease.

John William McLean, Godwin, N. C.; Davidson (N. C.) School of Medicine, 1902; member of the Medical Society of the State of North Carolina; member of the county board of health; aged 63; died suddenly, February 28, in Ventnor, N. J., of arteriosclerotic myocarditis.

Frank Montague Shipman, Denver; St. Louis College of Physicians and Surgeons, 1908; health officer of Aurora and member of the school board; on the staffs of the Porter Sanitarium and Hospital and Mercy Hospital; aged 55; died, February 21, of lobar pneumonia.

Lot E. Alexander, Pendleton, Ind.; University of Pennsylvania Department of Medicine, Philadelphia, 1874; member of the Indiana State Medical Association; formerly member and secretary of the board of education; aged 84; died, February 8, at Milroy, Pa., of senility.

Lilian Welsh, Columbia, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1889; professor emeritus of physiology and hygiene at Goucher College, Baltimore; in 1924 received the honorary degree of LL.D. from Goucher College; aged 79; died February 23.

George S. Ray, Erie, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1895; member of the Medical Society of the State of Pennsylvania; on the staff of St. Vincent's Hospital; aged 67; died, February 20, of heart disease and hypertension.

George Patrick Quinn, Shreveport, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1928; member of the Louisiana State Medical Society; formerly director of health in the public schools; aged 35; was drowned, February 1, in the Mississippi River.

James H. Bennett, Youngstown, Ohio; Western Reserve University Medical Department, Cleveland, 1887; for many years member and president of the board of education; aged 78; died, March 2, of arteriosclerosis, cerebral hemorrhage and hypertrophy of the prostate.

Vera Heinly Jones ☉ Denver; University of Colorado School of Medicine, Denver, 1925; director of maternal and child health and care of crippled children under the state board of health and the social security administration; aged 40; was drowned, February 16.

John Franklin Williams, Monticello, Fla.; Atlanta Medical College, 1897; member of the Florida Medical Association; on the associate staff of the John D. Archbold Memorial Hospital, Thomasville, Ga.; aged 71; died, February 6, in St. Vincent's Hospital, Jacksonville.

George Edward Leete, Concord, N. H.; Dartmouth Medical School, Hanover, 1877; member of the New Hampshire Medical Society; at one time member of the school board and board of health of Canaan; aged 86; died, February 22, of cerebral hemorrhage.

Ernest Don Smith, Fort Wayne, Ind.; Fort Wayne College of Medicine, 1896; member of the Indiana State Medical Association; on the staffs of the Methodist and Lutheran hospitals; aged 63; died, February 26, in St. John's Hospital, Springfield, Ill., of hypertension.

Jasper William Jolley, Marion, Ohio; Starling Medical College, Columbus, 1905; member of the Ohio State Medical Association; served during the World War; aged 57; died, February 13, at Rochester, Minn., of hemorrhage following an intestinal operation.

Charles Neumann Gelber ☉ New York; Long Island College Hospital, Brooklyn, 1913; member of the American Academy of Ophthalmology and Oto-Laryngology; formerly medical director of the Gelber Hospital; aged 46; died, March 3, of coronary sclerosis.

William H. Cox, Brooksville, Fla.; Chattanooga (Tenn.) Medical College, 1893; formerly state health officer and secretary of the state board of health; state prison physician from June 1928 to June 1932; aged 75; died, March 4, of nephritis and uremia.

Robert E. Crabtree, Amsterdam, Mo.; University Medical College of Kansas City, 1900; member of the Missouri State Medical Association; served during the World War; aged 67; died, March 14, in the Research Hospital, Kansas City, of encephalitis.

Leon Oscar Davis ☉ Philadelphia; Medico-Chirurgical College of Philadelphia, 1914; instructor in surgery, Temple University School of Medicine; on the staff of the Temple University Hospital; aged 48; died, February 27, of coronary thrombosis.

William Woodward Easterling, Lake Village, Ark.; University of the City of New York Medical Department, 1889; member of the Arkansas Medical Society; county health officer; aged 68; died, February 21, of heart disease and hypostatic pneumonia.

John P. Sudderth, Nowata, Okla.; Southern Medical College, Atlanta, 1891; member of the Oklahoma State Medical Association; formerly county health officer; on the staff of the Nowata Hospital; aged 69; died, February 15, of cirrhosis of the liver.

Robert Staunton Adams ☉ Wexford, Pa.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1891; member of the Medical Society of the State of New York; aged 71; died, February 28, of a cerebral hemorrhage.

Ernest G. Dittmer, Manchester, Iowa; Chicago Homeopathic Medical College, 1895; member of the Iowa State Medical Society; mayor; past president of the Delaware County Medical Society; aged 68; died, March 14, of cerebral hemorrhage.

Perry Franklin Bullington, Chico, Calif.; Eclectic Medical Institute, Cincinnati, 1892; Cooper Medical College, San Francisco, 1908; formerly health officer and president of the board of education; aged 71; died, March 5, in San Francisco, of uremia.

Grover Barney Woodard ☉ Wilson, N. C.; Medical College of Virginia, Richmond, 1915; past president of the Wilson County Medical Society; on the staff of the Mercy Hospital; aged 47; died, February 26, in the Memorial Hospital, Richmond, Va.

Harry Hyman Blond, Los Angeles; McGill University Faculty of Medicine, Montreal, Que., Canada, 1931; member of the California Medical Association; on the staff of Cedars of Lebanon Hospital; aged 31; died, March 12, of heart disease.

Thomas G. Parker, Racine, Wis.; Illinois Medical College, Chicago, 1907; served during the World War; on the staff of St. Luke's Hospital; aged 65; died, February 22, of cerebral hemorrhage with bulbar paralysis and fracture of the left femur.

Charles L. Maine, Du Bois, Pa.; College of Physicians and Surgeons, Baltimore, 1892; member of the Medical Society of the State of Pennsylvania; on the staff of the Maple Avenue Hospital; aged 72; died, February 11, of coronary sclerosis.

William Alex Quinn, Lakeland, Ky.; Louisville (Ky.) Medical College, 1883; at one time member of the state and county boards of health; formerly superintendent of the Central State Hospital; aged 77; died, February 27, of pneumonia.

Ira McConaughy Roadman, Minneapolis; University of Minnesota Medical School, Minneapolis, 1898; served during the World War; aged 72; died, February 14, at Mexico City, of peritonitis following an operation for acute appendicitis.

David B. Beggs, Wilkinsburg, Pa.; Jefferson Medical College of Philadelphia, 1899; member of the Medical Society of the State of Pennsylvania; formerly public school physician; aged 70; died, February 25, of cerebral hemorrhage.

Wunibald John Probst, Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1908; served during the World War; aged 52; on the staff of the Mercy Hospital, where he died, February 8, of arteriosclerotic heart disease.

George Marion Bumgarner, Richmond, Calif.; Beaumont Hospital Medical College, St. Louis, 1892; served during the World War; aged 66; died, March 15, in a hospital at Palo Alto, of arteriosclerosis and cerebral hemorrhage.

Ernest Antonio Lopez, San Leandro, Calif.; Indiana University School of Medicine, Indianapolis, 1924; member of the California Medical Association; aged 40; died, February 1, in the Peralta Hospital, Oakland, of brain tumor.

Francis Errett Roberts, Moundsville, W. Va.; Johns Hopkins University School of Medicine, Baltimore, 1916; member of the American Urological Association; aged 47; died, February 6, of pulmonary and intestinal tuberculosis.

Leslie Brand, Maysville, Ky.; Baltimore Medical College, 1901; formerly member of the board of education; aged 65; died, March 22, in the Harrison Memorial Hospital, Cynthia, of injuries received in an automobile accident.

Thomas Benton Crisp ☉ Washington, D. C.; George Washington University School of Medicine, Washington, 1919; aged 45; died, March 20, in the Walter Reed General Hospital, of cerebral hemorrhage and arterial hypertension.

Joseph David Hall, Readyville, Tenn.; Vanderbilt University School of Medicine, Nashville, 1883; member of the Tennessee State Medical Association; aged 83; died, February 27, of carcinomatosis and intestinal obstruction.

Benaiah R. Job, Cottage Grove, Ore.; University of Oregon Medical School, Portland, 1897; member of the Oregon State Medical Society; formerly mayor, and city health officer; aged 78; died, February 16, of chronic nephritis.

Francis Anthony Auleta, New York; University and Bellevue Hospital Medical College, New York, 1901; served during the World War; aged 58; died, March 10, in the Roosevelt Hospital, of subacute bacterial endocarditis.

Robert Cade Parrish ☉ Philadelphia; Medico-Chirurgical College of Philadelphia, 1898; district medical supervisor of the city public schools; served during the World War; aged 61; died, February 1, of cardiovascular disease.

William K. Dolan, Scranton, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1880; member of the Medical Society of the State of Pennsylvania; aged 83; died, February 28, of carcinoma of the prostate.

Robert Lee Seward, Isle of Wight, Va.; University of Maryland School of Medicine, Baltimore, 1891; member of the Medical Society of Virginia; for many years member of the school board; aged 75; died, January 31.

Emanuel Goodman, San Francisco; Medical College of Ohio, Cincinnati, 1892; member of the California Medical Association; aged 82; died, February 22, in the Mount Zion Hospital of arteriosclerosis and bronchopneumonia.

Gaetano Gerardo Petrocelli, Waterbury, Conn.; Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1905; aged 60; died, March 23, of cerebral hemorrhage, coronary disease and arterial hypertension.

Benjamin Leslie Harrison, Trumann, Ark.; Barnes Medical College, St. Louis, 1899; member of the Arkansas Medical Society; aged 70; died, February 19, in St. Bernard's Hospital, Jonesboro, of bronchopneumonia.

Louis Altman * New York; St. Louis University School of Medicine, 1927; aged 36; on the staffs of the Jewish Maternity Hospital and Beth Israel Hospital, where he died, March 22, of a staphylococcal infection.

William Alonzo Ostrander, Smethport, Pa.; Jefferson Medical College of Philadelphia, 1899; served during the World War; aged 65; died, February 12, in the Community Hospital, Kane, of cerebral hemorrhage.

Henry Augustus Elliot, Barnet, Vt.; University of Vermont College of Medicine, Burlington, 1893; formerly member of the state legislature; aged 70; died, March 31, in the Brightlook Hospital, St. Johnsbury.

Semmie Moberly, Little Rock, Ark.; Eclectic Medical University, Kansas City, Mo., 1918; served during the World War; aged 42; died, February 25, in the Veterans Administration Facility of lobar pneumonia.

Alfred Edwin McRitchie, Qu'Appelle, Sask., Canada; Western University Faculty of Medicine, London, Ont., 1911; aged 48; died, January 6, in the Union Hospital, Indian Head, of staphylococcal septicemia.

Gipson Benjamin Mack * Auburn, N. Y.; New York Homeopathic Medical College and Hospital, 1904; on the staffs of the City Hospital and the Mercy Hospital; aged 72; died, February 27, of encephalitis.

Jeffery Charles Douville * North East, Pa.; University of Maryland School of Medicine, Baltimore, 1893; aged 72; died, February 2, in St. Vincent's Hospital, Erie, of bronchopneumonia and arteriosclerosis.

Charles Perry Horner, Enid, Okla.; Northwestern University Medical School, Chicago, 1899; member of the Illinois State Medical Society; aged 64; died, February 6, in a local hospital of cerebral hemorrhage.

Charles H. Barnstein, Newton, Wis.; Milwaukee Medical College, 1906; member of the State Medical Society of Wisconsin; aged 57; died, March 4, of hypostatic pneumonia and coronary thrombosis.

Adin Henry Foster, Erie, Ill.; Keokuk (Iowa) Medical College, 1905; member of the Illinois State Medical Society; aged 72; died, March 3, in the Mercy Hospital, Davenport, Iowa, of myocarditis.

John James Gill, Chatham, La.; Memphis (Tenn.) Hospital Medical College, 1891; member of the Louisiana State Medical Society; aged 71; died, February 23, in the Ruston-Lincoln Sanitarium, Ruston.

Louis D. Barbot, Charleston, S. C.; Medical College of the State of South Carolina, Charleston, 1892; aged 70; died, March 24, in St. Francis Xavier Infirmary of paralytic ileus and coronary sclerosis.

Nathaniel Selleck * Danbury, Conn.; University of the City of New York Medical Department, 1891; on the staff of the Danbury Hospital; aged 69; died, March 13, of carcinoma of the stomach.

William Marvin O'Cain, Jasper, Fla.; Atlanta College of Physicians and Surgeons, 1900; aged 65; died, February 5, in River Junction of hypostatic pneumonia, furunculosis and an infected arm.

George Franklin Roberts, Lexington, S. C.; University of Tennessee Medical Department, Nashville, 1908; member of the South Carolina Medical Association; aged 55; died, January 22, in Columbia.

Charles Morris Quimby * Gloucester, Mass.; Maryland Medical College, Baltimore, 1904; on the staff of the Addison Gilbert Hospital; aged 68; died, February 25, of coronary occlusion.

Millard Henry Crawford, Charlottesville, Va.; University of the City of New York Medical Department, 1874; at one time served in the navy; aged 85; died March 20, of cardiac embolus.

Julian E. Tilman, Powhatan, Va.; Medical College of Virginia, Richmond, 1900; formerly county coroner and chairman of the board of health; aged 61; died, February 25, of heart disease.

G. W. Sherrer, Rayle, Ga.; University of Georgia Medical Department, Augusta, 1876; member of the Medical Association of Georgia; Confederate veteran; aged 90; died, February 26.

Earle C. Glenn, Sandy Lake, Pa.; Baltimore Medical College, 1903; aged 62; died, February 24, in the Mercer County Home and Hospital, Mercer, of heart disease and tuberculosis.

John McElhenny Grubbs, Seward, Pa.; Miami Medical University, Columbus, 1886; aged 80; died, February 10, in the Lee Homeopathic Hospital, Johnstown, of cerebral hemorrhage.

Frederic Thomas Masengill, Jonesboro, Tenn.; Hospital College of Medicine, Louisville, Ky., 1898; served during the World War; aged 63; died, February 28, of myocarditis.

Otto Fred Heidrich, Pasadena, Calif.; University of Minnesota Medical School, Minneapolis, 1936; aged 28; died, February 16, of carcinomatosis and teratoma of the testicle.

Richard F. Duncan, Tompkinsville, Ky.; University of Louisville (Ky.) Medical Department, 1886; served during the World War; aged 74; died, March 25, of spinal sclerosis.

Joseph Harry Honnet, Wilmington, N. C.; Columbia University College of Physicians and Surgeons, New York, 1900; aged 63; died, February 28, of coronary thrombosis.

Every Paul Lunderville * Berlin, N. H.; University of Vermont College of Medicine, Burlington, 1896; also a pharmacist; aged 63; died, February 4, of acute nephritis.

Frederick Lewis Baker, Philadelphia; Medico-Chirurgical College of Philadelphia, 1895; served during the World War; aged 72; died, February 27, of arteriosclerosis.

John W. Greenman, Galesburg, Ill.; Keokuk (Iowa) Medical College, 1898; aged 63; died, February 22, in Clermont, Fla., of uremia, nephritis and cerebral hemorrhage.

Harry de Nell Williams, San Francisco; College of Physicians and Surgeons of San Francisco, 1906; aged 58; died, February 18, of a self-inflicted bullet wound.

Homer S. Bruce * Opelika, Ala.; Atlanta Medical College, 1891; formerly on the staff of the East Alabama Hospital; aged 64; died, March 12, of coronary thrombosis.

James Max Keaton, Asheville, N. C.; Howard University College of Medicine, Washington, D. C., 1917; aged 59; died, February 22, of acute dilatation of the heart.

William Lowry Arnold, Church Hill, Tenn.; University of Tennessee Medical Department, Nashville, 1901; aged 63; died, March 11, of cerebral hemorrhage.

Donald Eugene Harris, Los Angeles; Medical College of Ohio, Cincinnati, 1902; aged 60; died, February 18, of traumatic fracture of the sixth cervical vertebra.

Clarence Frederick Bass, Chattanooga, Tenn.; Meharry Medical College, Nashville, 1916; aged 52; died, March 3, of cardiac insufficiency and thrombosis.

John A. Ferguson, Memphis, Tenn.; University of Louisville (Ky.) Medical Department, 1895; aged 75; died, March 14, in the Western State Hospital.

Frank Benjamin Cogswell * Washington, D. C.; Hering Medical College, Chicago, 1908; aged 53; died, March 28, of cerebral hemorrhage and uremia.

Frank Taylor, Hazleton, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1901; aged 65; died, February 21, of chronic myocarditis.

Walter P. Deakins, Wildwood, Ga.; University of Tennessee Medical Department, Nashville, Tenn., 1892; aged 71; died, February 28, of influenza.

Alva Burton Burris, Salisbury, Md.; Hahnemann Medical College and Hospital of Philadelphia, 1909; aged 65; died, March 25, in a local hospital.

Robert E. Darby, Springfield, Mo.; University Medical College of Kansas City, Mo., 1893; also a dentist; aged 73; died, March 9, of lobar pneumonia.

Jephtha Dickey Davis, Fort Thomas, Ky.; Medical College of Ohio, Cincinnati, 1890; aged 72; died, March 25, in Coral Gables, Fla., of heart disease.

Edward Wray Crockett, Macclenny, Fla.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1916; aged 47; was shot and killed, February 24.

Platt Welch Upshaw, Galena, Kan.; American Medical College, St. Louis, 1892; aged 66; died, February 24, in St. John's Hospital, Joplin, Mo.

William Henry Gunther, Sheboygan, Wis.; Rush Medical College, Chicago, 1883; aged 78; died, March 27, of arteriosclerosis.

Correspondence

THE MODE OF ACTION OF SULFANILAMIDE

To the Editor:—In a communication in THE JOURNAL, April 9, Elizabeth S. Hemmens and G. M. Dack called attention to an ambiguity in our article on the mode of action of sulfanilamide in THE JOURNAL, January 29, page 349.

We state in the summary: "The major action of sulfanilamide on the beta hemolytic streptococcus seems to be neutralization of the toxins." We used the word "neutralization" in its general sense of "to render inert the peculiar properties of" rather than in the chemical sense of "chemically combine with and destroy." We used the plural "toxins" to indicate that we were not referring solely to hemotoxin. It is evident from this communication and from letters which we have received that the word "neutralization" was poorly chosen and that we should have said: "The major action of sulfanilamide appears to be on the production of toxins or aggressins. We do not yet know to what this is due." We did consider in November 1932, when the article was submitted for publication, that a loose chemical combination with preformed toxin was most probable. We have since been unable to demonstrate by the usual methods any inactivation of preformed hemotoxin. However, it must be remembered that the usual test is based on visible hemolysis produced within one hour and that such concentrations of hemotoxin do not ordinarily accumulate in the body in beta hemolytic streptococcus infections before death. The marrow culture should therefore be more suitable than the ordinary toxin titration for detecting quantities of toxin comparable to what might be produced in human infections.

The degree of bacteriostasis produced by sulfanilamide in broth cultures could hardly produce more than delayed death if it were the only factor operative in therapy with the drug. We are still of the opinion that the major action of sulfanilamide is on the toxins or aggressins which are responsible for the virulence of the organism and which render it relatively immune to bactericidal substances against the beta hemolytic streptococcus present in normal human serum and in monkey serum but not present in the serum of the mouse. We have now more evidence to support the view that bactericidal substances must be present in the serum of the animal, be developed or be introduced from another source if sulfanilamide is to save lives. For example, sulfanilamide alone has only a slight bacteriostatic effect on pneumococcal infections in marrow cultures or broth cultures but sulfanilamide plus type specific antipneumococcus serum is far more effective than either alone. We also have data on a sufficient number of clinical beta hemolytic streptococcus infections treated with only 0.3 to 0.6 Gm. of sulfanilamide every four hours night and day to support our evidence from marrow culture that the previously used large doses are not necessary in beta hemolytic streptococcus infections.

Our observations that the presence of bactericidins in the serum is more necessary than phagocytosis by the cells and that the previously used doses of sulfanilamide are higher than necessary with small inoculations of organisms, such as are found in human infection, have already been confirmed by Hoare (*Lancet* 1:655 [March 19] 1938).

Experiments are cited by Hemmens and Dack with *Bacterium necrophorum* as evidence that the action of sulfanilamide is not on the toxins or aggressins. It is difficult to see why the fact that toxin production by *Bacterium necrophorum* has not yet been demonstrated proves that toxin production by this organism does not occur when it is recalled how many of the gonococcus and meningococcus were studied before

toxin production by these organisms was demonstrated and effective antitoxins were prepared. It is difficult to see how "inhibitory action of the drug on the reproductive rate of the organism" of the degree demonstrated by Long and Bliss and others in ordinary culture mediums could explain the enormous differences in bactericidal power observed by Colebrook, Buttle and O'Meara between sulfanilamide in monkey or human blood and equal concentrations of sulfanilamide in mouse blood, or could explain the differences between our observations in marrow culture or mediums containing human serum and in Hartley broth.

We regret that a poor choice of terms failed to make our meaning clear and appreciate having had this ambiguity called to our attention.

EDWIN E. OSGOOD, M.D.

INEZ E. BROWNLEE, B.A., Portland, Ore.

CYCLOPROPANE AND POSTOPERATIVE ATELECTASIS

To the Editor:—It has come to be accepted in recent years that bronchial obstruction is necessary in the causation of postoperative atelectasis. Jones and Burford (*THE JOURNAL*, April 2, p. 1092) postulate that massive atelectasis can occur in the absence of bronchial obstruction. This view is based on their observations on cyclopropane anesthesia. They maintain that, because the cyclopropane and oxygen are readily absorbed and slowly absorbable nitrogen is in time dissipated, there is a gradual disappearance of gases from the alveoli which could keep them distended. Contributing factors are mentioned, such as quiet, shallow respirations, opiates, the pharmacologic effect of cyclopropane itself and also the high oxygen content in the lungs.

The view which the authors have taken would seem to be at odds with our concepts of the physiology of respiration. One of the fundamental principles involved in this problem is the difference between the intrapleural and the atmospheric pressures. The latter is known to be 6 mm. of mercury higher than the former (for adults). The atmosphere is directly continuous with the bronchi and alveoli, provided the air passages are patent. On inspiration the intrapulmonary pressure is approximately 9 mm. greater than the intrapleural pressure. It is obvious from these facts that atelectasis should not occur no matter how absorbable the gases may be, provided the normal gradient between intrapleural and intrapulmonary pressures is maintained.

That this differential pressure may be maintained during anesthesia is not to be doubted, for atmospheric pressure is exerted on the exterior of the anesthesia bag and, in addition, since the mask is not sealed to the face some air must from time to time be sucked into the air passages. Any quiet shallow breathing that occurs during anesthesia will have little influence in collapsing the lungs, so long as the differential pressure is maintained. The lungs are known to remain distended even after breathing has ceased.

The authors describe a case of their own and three others which came to autopsy. Of one of the latter it is definitely stated that no bronchial obstruction was observed, although this is assumed to have occurred in the others. It is difficult to reconcile the presence of atelectasis in these cases with the absence of bronchial obstruction. It may be suggested that some functional condition such as bronchial spasm or a falling back of the tongue is responsible for the closure of the air passages. Another possibility is the inhalation from an empty bag; I have frequently seen anesthetists practice this procedure toward the end of anesthesia.

There have been no experiments to prove that quickly absorbable gases per se lead to atelectasis; there is on the contrary evidence that this does not occur. Numerous experiments have

been performed in which animals have survived atmospheres of pure oxygen for days (Smith, S.: *J. Physiol.* 24:19, 1899).

The recommendation of the authors that an inert gas such as helium be added to cyclopropane is excellent because it will at least delay atelectasis when bronchial obstruction is present.

JULIUS KAUNITZ, M.D., New York.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

ACTION OF DRUGS ON SYMPATHETIC NERVOUS SYSTEM

To the Editor:—An article by Boyd and Connell (*Am. J. M. Sc.* 194: 768 [Dec.] 1937) describing the action of benzedrine and related substances prompts me to ask a number of questions, some clinical, some pharmacologic. In spinal anesthesia, ephedrine salts are used to combat the falling blood pressure, but it is said that too large a dose of ephedrine may be harmful. This seems to be borne out by the experiments mentioned by Boyd and Connell. They state that previous cocainization enhanced the effect of epinephrine on the blood pressure of rabbits but actually decreased the response to ephedrine and benzedrine compounds. In a number of instances a fall in blood pressure occurred when ephedrine or benzedrine compounds were injected after cocaine. Since I am interested in the treatment of cocaine poisoning, I raise the following questions: In shock even the injection of epinephrine is deprecated, since it tends to trap blood on the arterial side of the circulation and prevent an adequate return to the heart. In cocaine poisoning would epinephrine be indicated and benzedrine and ephedrine possibly contraindicated? Is sodium phenobarbital used in cocaine poisoning only if the patient is in convulsions, or would it be used also on an unconscious patient? What is the proper treatment of cocaine poisoning? Boyd and Connell state that ergotamine diminished but did not reverse the effect of benzedrine and ephedrine in raising blood pressure and concluded that to a certain extent these drugs acted directly on the muscle of the blood vessel, to cause, presumably, vasoconstriction. What is the explanation then of the increase of blood flow, presumably vasodilatation, in the perfusate of ergotamized frogs after ephedrine? The results seem contradictory unless some other factors enter. Will you please state the point of action (muscle, nerve cell or neurocellular junction) of ephedrine, benzedrine and epinephrine, and the reason for the effects of cocaine and ergotamine when used with these drugs.

M.D., Pennsylvania.

ANSWER.—The most generally acceptable explanation of the mechanism of sympathetic responses is that the impulse comes down the sympathetic nerve fiber and liberates epinephrine or some substance closely related to it within the smooth muscle cell. This epinephrine then diffuses from the nerve ending into the contiguous muscle protoplasm at the myoneural junction, where it unites with either sympathin E or sympathin I. This new complex then causes physical or chemical changes in the muscle protoplasm which result in contraction or relaxation.

Cocaine increases the responses to sympathetic nerve stimulation and also to the injection of epinephrine, as was shown by Fröhlich and Loewi in 1910. The best available explanation for the latter effect would seem to be that cocaine makes the smooth muscle cell membrane more permeable, so that injected epinephrine can more readily get through it and thereby produce a sensitized or increased effect. Only a small proportion of smooth muscle cells, however, can be demonstrated to have nerve endings within them. The remainder of the cells are supposedly brought into action by diffusion of epinephrine or epinephrine-sympathin complex into them from muscle cells which do contain sympathetic nerve endings. Cocaine, by making these cell membranes more permeable, would increase the ease of diffusion of the stimulant and thus produce a heightened response. Ergotoxin or other ergot alkaloids block the responses to the augmentor sympathetic impulses not by paralyzing the nerve endings or production of sympathin but apparently by preventing epinephrine-sympathin E complex from reacting with the muscle protoplasm. These concepts cannot be taken as being entirely proved, but they afford the most rational explanation of the facts now available.

It was discovered by Tainter in 1925 that responses to the other amines, such as ephedrine and tyramine, did not follow the pattern of epinephrine reactions, particularly with regard to the cocaine phenomena. He showed that at the time when cocaine sensitized the response to epinephrine it desensitized or abolished the responses to ephedrine, tyramine, benzedrine and propadrine as well as to other less widely known compounds of this sympathomimetic group. The easiest explana-

tion of how these compounds produce sympathetic effects in the uncocainized preparations would be that they stimulated the nerve endings and caused the liberation of epinephrine, thus starting the typical chain of sympathetic activation. However, the cocaine results make this a difficult hypothesis to sustain. More likely possibilities would be that these compounds produce their stimulation beyond the nerve endings either by reacting with the muscle protoplasm directly or by chemically uniting with the sympathins and thereby producing a stimulating material similar to the epinephrine-sympathin complex but not identical with it.

Ergotoxin produces a reversal of sympathetic responses to epinephrine by preventing the responses to the epinephrine-sympathin E augmentor complex. In the blood vessels, this allows the vasodilator action of the epinephrine-sympathin I complex which is liberated simultaneously to be observed in the fall of blood pressure. There is also the possibility of acetylcholine being liberated by these vasodilator fibers and contributing to the sympathetic inhibitor responses.

The sympathetic nervous system of the frog is poorly differentiated in comparison to that of mammals, and particularly man, and the pattern of responses to many sympathetic drugs shows much variation in this species from that of the higher animals. In addition, these reactions are so complex and are so incompletely understood, and the data in many cases contain so many conflicting elements, that no theory can be expected to reconcile completely all the reported observations.

Some of the better established facts have immediate clinical importance. Thus, cocaine abolishes or greatly diminishes the responses to many of these compounds. This has been shown experimentally under a wide variety of conditions, and it has also been demonstrated clinically. Therefore, these epinephrine substitutes cannot be used indiscriminantly for their usual effects on the circulation when cocaine and possibly other local anesthetics are in the body. About the best of the epinephrine substitutes under these conditions is neosynephrine, which chemically is close enough to epinephrine so that its effects are not abolished by the local anesthetic, and yet is sufficiently dissimilar so that its actions are not potentiated. Therefore, in cocaine poisoning neosynephrine would seem to be the drug of choice for stimulating the circulation, rather than epinephrine, the effects of which might be unpredictably potentiated, or the other amines, the effects of which might be greatly diminished or completely abolished.

In poisoning from local anesthetics, phenobarbital is used to depress the central nervous system sufficiently to prevent convulsive seizures. If the patient is not having convulsions but is in a depressed state, administration of a further depressant would seem to be unwise. Probably the most important single measure in preventing catastrophes from local anesthetics is to maintain adequate artificial respiration. If there is a lowered level of blood pressure, this can be combated by cautious doses of epinephrine or, better still, by full doses of neosynephrine. While it is true that in shock or collapse strong vasoconstrictors, such as epinephrine, may tend to pool the blood in the arterial side of the circulation, the more important requirement is to maintain effective levels of pressure and blood flow through the cerebral circulation.

SAFECOTE INSULATING MATERIAL

To the Editor:—An electrician gets a skin eruption on his hands and arms when working with electric wire made by the Parante Cable and Wire Company, the insulating of which is impregnated with "Safecote," which makes it fireproof. Could you tell me what the substance is which might irritate the skin? Other kinds of insulation which are not fireproof do not irritate this man.

W. E. WILSON, M.D., Northfield, Minn.

ANSWER.—The Parante Cable and Wire Company was given an opportunity to furnish precise information as to the nature of "Safecote." Safecote is a copyrighted name applied to a rubber covered cotton-braided building wire, which is treated with compounds to make it moisture and flame resisting. The cotton braid on Safecote wire is first impregnated with a compound known as a saturator consisting of asphalt and stearin pitch. The wire is then given an intermediate coat of a compound consisting of stearin pitch and montan wax. Wire that is to remain black is given a further treatment of a lubricant dressing, which consists of montan wax, paraffin wax and gilsonite. Wire that is to be colored for reasons of polarity is coated over the intermediate coat with a coloring solution which consists of an alcohol soluble gum, a pigment and a plasticizer, such as castor oil.

Even without additional facts it may be stated that several of the chemicals mentioned are quite capable of producing skin disorders. Contact with the rubber covered cotton braid may

lead to definite dermatitis if certain accelerators were used in connection with the curing of the rubber. In this situation patch tests should be used with the various portions of the wire insulation, particularly the rubber coated braid.

The entire situation with respect to dangers from wire coating material cannot be disposed of by pointing out that dermatitis may follow contact. In extensive use in this industry are a variety of chlorinated naphthalenes and chlorinated diphenyl. The disturbing "color acne" apparently is linked with the chlorination. In addition to injury to the skin, profound systemic disease may be produced under conditions of appropriate exposure in which the liver may be severely damaged. In some instances these insulating waxes may be dissolved in carbon tetrachloride, toluene or benzene. Obviously these substances possess toxic properties, and when their vapors are inhaled or when the skin is brought in contact with them disturbances may arise. The entire problem of the toxic properties of chlorinated hydrocarbons in connection with their use in the wire industry formed the basis of a symposium presented in part in the *Journal of Industrial Hygiene and Toxicology* 19:283 (Sept.) 1937 in a publication by Drinker and his associates. A separate publication based on this symposium has been prepared by the Harvard School of Public Health under date of June 30, 1937.

POSSIBLE INTESTINAL OBSTRUCTION FROM GUMMA

To the Editor:—A patient with complete obstruction for three days, a history of 25 pounds (11 Kg.) loss of weight, and constipation of a year and a half, was operated on. A hard hour glass constrictive mass completely obstructive in the descending colon was found, which was thought to be a cancer. There were no detectable metastases to other viscera. The operation consisted of cecostomy for relief of obstruction. Signs of syphilitic heart disease with signs of central nervous involvement, as evidenced by Argyll Robertson pupils, prompted the taking of a Kahn test, which was 4 plus in all dilutions. The patient has made a nice recovery and after two injections of a bismuth compound plus iodide has had normal bowel movements. I have been unable to find any parallel cases. If the mass is a gumma, is it reasonable to hope that antisyphilitic treatment will keep the lumen of the involved portion of the colon patent?

M.D., Texas.

ANSWER.—Syphilis of the large or small bowel is apparently rare; in fact, it is so rare that records of indisputable cases are not found in the literature, although reports of presumptive cases appear occasionally. A similar case (not reported) with rapid disappearance of the obstruction following two injections of arsphenamine and a positive Wassermann test of the blood as the only evidence on which to base the diagnosis of syphilis has been noted. A conclusive diagnosis of syphilis of the colon should be based on (1) x-ray demonstration of the mass in the bowel, (2) serologic or clinical evidence of syphilis, (3) pathologic changes characteristic of syphilis in tissue from the mass, (4) involution of the mass under antisyphilitic treatment and (5) observation for five years or more.

Experience would indicate that, if the constriction is due to a gumma, antisyphilitic treatment will keep the lumen open; if, in fact, obstruction recurs it would suggest that syphilis is not the cause of the bowel condition.

DERMATITIS FROM DRESS SHIELDS

To the Editor:—A patient has a dermatitis corresponding to the size of her dress shields. I should like to know how dress shields are made and what kind of chemicals are used in the manufacturing process.

M.D., Wisconsin.

ANSWER.—Dress shields are made of cloth impregnated with a rubber compound. This is covered by ordinary fabric. The cause of the dermatitis is probably the rubber, which is subjected during manufacture to the action of one of many forms of "accelerator." By the use of these the time needed for vulcanizing is reduced from hours to minutes. Most of the accelerators are chemicals and may be irritating to the skin or are among those substances to which the skin becomes sensitized easily. Aniline, paraphenylenediamine, thiocarbonyl, sulfur chlorides and hexamethylenetetramine (the familiar methenamine used as a urinary antiseptic) are some of the common ones. Methenamine gives off formaldehyde in an acid medium, which makes it valuable in the bladder when the urine is acid. Acid sweat in the axilla acts in the same way and formic acid is produced, which is an active irritant (Shepherd and Krall: Poisons in the Rubber Industry, *J. Indust. Hyg.* 2:33, 1920). The cloth covering of the dress shield is no protection when it is saturated with sweat. The rubber industry is trying to replace the more irritating accelerators with those less apt to cause trouble.

It may be possible to prevent the dermatitis in the case under discussion by the substitution of paper dress shields for the

ones made of rubber. The paper ones are pinned to the dress and discarded when they become soiled. Attempts to lessen axillary sweating are not advisable. A degree of suppression of axillary sweating sufficient to warrant discarding the dress shields cannot be obtained from the use of x-rays with safety, though excessive sweating can be lessened in this way.

TENDER NODULES AFTER INTRAMUSCULAR INJECTION

To the Editor:—A woman, aged 33, cannot take sedatives by mouth and she has an idiosyncrasy to opiates. The nurses gave her four capsules of soluble phenobarbital into the biceps muscles (two in each arm) over a period of forty-eight hours. The injections were given by several different nurses, who have often given the same drug. Several weeks later the patient reported that she had tender nodules at the site of each injection. On palpation there were deep, firm, slightly tender nodules. I felt that they would go away in time, and they are now less tender but are still present. Another physician has told her they will persist for life. What is the proper treatment, if any? What is the prognosis as to their disappearance? Is this a frequent enough happening to make one hesitate to use the drug?

M.D., New York.

ANSWER.—To answer the third question first, a completely soluble, nonirritating substance should be promptly absorbed from the muscle without unpleasant after-effects. Soluble phenobarbital is usually such a substance; therefore it is assumed that some complicating factor was present in this case.

Water solution of sodium phenobarbital is rather unstable and should be freshly prepared and injected at once lest irritating substances form in the solution. Rapid injection into the muscle and, indeed, slow injection in a person who bleeds easily may result in a small hematoma at the site of injection. The statement that the patient cannot take sedatives by mouth raises the question of a personal sensitiveness to the drug that might produce sufficient tissue reaction to cause the symptoms.

There is no specific treatment. The application of heat may hasten resolution but resolution takes place in any event. Such nodules usually completely disappear. In infrequent instances they may remain palpable for a long period of time but they become so small and insensitive that they are of no concern to the patient.

MUSCULAR DYSTROPHY

To the Editor:—A boy, aged 14, fell from a height of 15 feet at the age of 3, striking his spine just below the neck. Since then a progressive atrophy has developed of all the muscles of the body except the lower part of the legs, which have apparently remained normal. He is emaciated, with atrophy of all muscles and with little or no subcutaneous fat. The skin is dry, and the reflexes are absent with exception of the pupillary reflexes, which are normal in reaction to light and in accommodation. He walks with a peculiar swaying gait and has a marked lordosis. When he falls or lies flat he has a characteristic "climbing on himself" method of rising, suggesting pseudohypertrophic muscular dystrophy. There is no history of any similar condition in his immediate or distant family. Can you suggest a diagnosis and any type of treatment? Do you think aminoacetic acid and a high protein diet would be of value?

M.D., Pennsylvania.

ANSWER.—In spite of the fact that there is no family history, the description of the patient is such that muscular dystrophy is practically the only disease to be considered. As trauma appears to have no part in this disease, the history of the fall at the age of 3 should be disregarded. Neither aminoacetic acid nor a high protein diet has proved to be of any value in dystrophy. One or two patients have been somewhat relieved and perhaps made 5 or 10 per cent better by oral prostigmine. Before any treatment is considered, the diagnosis should be made certain by biopsy.

ADRENAL CORTEX IN HAY FEVER

To the Editor:—Will you kindly supply information concerning the treatment of hay fever by the use of adrenal cortex extract?

LOUIS W. GERSTNER, M.D., Kalamazoo, Mich.

ANSWER.—A review of the literature on the use of adrenal cortex extract is given in a paper by Prickman, Giles and Koelsche (*J. Allergy* 158:9 [Jan.] 1938). These workers administered the extract intravenously to nineteen patients, of whom sixteen had asthma, two severe vasomotor rhinitis and one severe urticaria and angioneurotic edema. They concluded that the treatment gave little or no specific benefit in these conditions. More favorable results on the use of the extract are reported by the Pottengers (*California & West. Med.* 43: 10 [July] 1935), who treated fifty asthmatic patients. The adrenal cortex extract in these cases was administered orally. Thirty of the fifty patients were greatly improved. It is noteworthy that a program of rest was required of each patient.

in addition to the medication. The reports of other workers who used the extract in allergic conditions are much less favorable than the report of the Pottengers. No reference has been found to the use of adrenal cortex extract in uncomplicated hay fever. Rappaport and Hecht (unpublished data), however, gave massive doses of adrenal cortex extract by mouth coseasonally to eighteen ragweed hay fever patients in 1935 with no noticeable benefit. It is questionable whether the material is at all effective orally.

EPHEDRINE TO PREVENT TRANSFUSION REACTIONS

To the Editor:—In the hope of preventing unfavorable reactions following a blood transfusion in an allergic patient, three-eighths grain (0.024 Gm.) of ephedrine was given by mouth and immediately following the transfusion of 500 cc. of whole blood, three-fourths grain (0.05 Gm.) of ephedrine hypodermically. No reaction was noted. Four days later another 500 cc. of whole blood was given and the ephedrine administered as before. Four hours later her temperature rose to 100 F. No other reactions were noted. Manifestly these two transfusions are of no statistical value. I am interested, however, to know whether ephedrine has been used in this way before and whether or not it has been found of value in the prevention or amelioration of undesirable reactions of transfusion of whole blood.

J. KINGSLEY MACDONALD, M.D., White Plains, N. Y.

ANSWER:—So far as is known, epinephrine and ephedrine have not been used in transfusions of human blood but when injecting serum, e. g., tetanus or diphtheria antitoxin, it should be used prophylactically if the skin or conjunctival tests for horse serum are positive, and therapeutically if serum sickness develops. The occurrence of serum reactions in man results usually from the introduction of a foreign or heterologous type of serum. It should not occur from injections of human serum, which is a homologous type. However, such reactions do rarely occur, and have been reported in the literature (Tuft, Louis: Clinical Allergy, Philadelphia, W. B. Saunders Company, 1937). The classic example is the case reported by M. A. Ramirez (Horse Asthma Following Blood Transfusion, *THE JOURNAL*, Sept. 27, 1919, p. 984), in which, following transfusion from a horse sensitive donor, the recipient developed a similar sensitivity on contact with horses. H. C. Berger (*M. Clin. North America* 7:1169 [Jan.] 1924) reported the occurrence of urticaria resulting from the injection of blood from a horse sensitive person into one who had previously received antistreptococcus and normal horse serum. Duke and Stofer (*ibid.*, p. 1255) reported a case of immediate serum reaction in a milk sensitive recipient whose transfusion was from a donor who had ingested milk. DeBesche (*Berl. klin. Wchnschr.* 46:1607, 1909) reported a case of sudden dyspnea following transfusion. Sensitivity from transfusion is temporary and disappears in a month or less. One cannot be permanently sensitized by blood transfusion or by any other method (except probably by inheritance). The Prausnitz-Küstner reaction (passive transfer) is an example of temporary local sensitivity of the skin which is frequently useful in determining the cause of attacks of allergic conditions.

DIET AND URIC ACID STONE

To the Editor:—Kindly outline the medical and dietary treatment of uric acid stone formation in the kidneys.

M.D., Alabama.

ANSWER:—To answer this question one would have to assume certain conditions: that the urine is not infected, that there is no obstructive uropathy, and that the size of the stone or stones is within the limits usually conceded as compatible with spontaneous passage (less than 1 cm. in diameter). Granted these premises, the question resolves itself into a discussion of purine metabolism and the control of uric acid excretion.

From 0.3 to 1.2 Gm. of uric acid is excreted in the urine daily, depending on the diet. This uric acid is either exogenous (from food) or endogenous (derived from the breakdown of body tissues). Purine bodies are formed from the nucleoprotein of highly cellular glands, such as thymus, liver or kidney, and extracts of muscular tissue; methyl purines are highly concentrated in tea, coffee and cocoa. Nucleoprotein is changed in the process of digestion into nucleic acid, which in turn is split into nucleotides. Each nucleotide is formed of phosphoric acid plus a carbohydrate, plus a nitrogenous base. Concerning the endogenous supply, even on a purine-free diet man will excrete from 0.3 to 0.6 Gm. of uric acid daily as the result of the breakdown of his cellular tissues. Only from 60 to 70 per cent of uric acid is eliminated in the urine; the rest is probably changed into urea. A definite explanation of the formation of uric acid kidney infarcts has not been given

but they are most probably due to a colloid imbalance in the urine. An acid urine may precipitate uric acid crystals.

True uric acid stones rarely demand treatment. They are usually precipitated as crystals which pass spontaneously, causing minor attacks of colic at the time. These patients pass small stones and gravel.

The diet may affect their course, but since even on starvation regimens the uric acid excretion is only about halved it must be realized that dietary treatment is in no sense curative. A purine-free diet would be too rigorous; the diet recommended is a good, mixed, easily digested one, avoiding only highly cellular organs, such as liver, sweetbreads, kidneys and brains. The bowels should be regulated with preferably a mild saline cathartic. Plenty of milk is recommended both because it is purine-free and because of its high vitamin content.

Since the formation of stones depends more on the concentration of a salt than on the total amount excreted in a day, the forcing of fluids is probably more efficient in the dietary treatment than reduction of purine-containing foods. The concentration can be as well controlled by doubling the fluid intake as by restricting the food.

In the presence of urinary infection, uric acid calculi quickly become coated with secondary salts. The problem is then much more complicated and dietary treatment is used not so much to control the size of the stone as to combat infection. The acid ash, high vitamin diet is extensively used in appropriate cases of this group.

In any stone, no matter what the composition, if it will not pass spontaneously, surgical treatment is necessary.

SEROLOGIC RELAPSE IN SYPHILIS

To the Editor:—A man, aged 37, has been treated for syphilis since February 1936. He was previously treated by another physician for about fourteen months with nearsphenamine and oleo-bi. The Wassermann reaction became negative. He was allowed a month's probation before returning for a Wassermann test. He did not return until six months had elapsed, when his Wassermann reaction was 4 plus. Since February 1936 he has had continuous overlapping treatment, starting with bismuth. This has consisted of two courses of nearsphenamine, ten and twelve doses respectively (0.6 Gm.) and four courses of mapharsen (0.06 Gm.) varying from ten to fourteen doses of thio-bismol, given at intervals of from three to four days. The Wassermann reaction was 4 plus for the first ten months of my treatment. It then became 1 plus, and the Kahn reaction became 1 plus Nov. 10, 1936. It remained so until September 16, when another laboratory (laboratory B) reported the Wassermann, Hinton and Kahn reactions negative. Again laboratory B reported all three negative, Dec. 10. Now (Feb. 28, 1938) laboratory A reports the blood Wassermann reaction 2 plus and the Kahn reaction negative, and laboratory C reports the Wassermann and Kahn reactions doubtfully positive (February 11). I have been unable to get the patient to submit to a spinal Wassermann test as yet, although I have tried to show him the dangers of untreated syphilis of the central nervous system. However, today he gave me his promise to have a spinal Wassermann test made in the near future. I realize that a neurorelapse may have occurred during the six months that he was untreated, thus accounting for the persistently positive reaction. What course should be pursued should the spinal fluid be negative? Should nearsphenamine and bismuth be continued in full doses until the blood Wassermann reaction is absolutely negative, or has a total of three years' treatment been sufficient for the present, without regard to the 2 plus or doubtful positive serologic reactions obtained recently? There are no signs or symptoms referable to the central nervous system or vascular system. In fact, the patient is in good condition. Should the spinal fluid be positive, I suppose the treatment should be directed toward the central nervous system, with trypanamide instead of nearsphenamine.

M.D., Pennsylvania.

ANSWER:—In the first place, the significance of the Wassermann relapse after the patient's fourteen months of treatment at the hands of another physician depends on what was wrong with the patient when his treatment started—whether he had early or late syphilis, which the inquirer does not state. If he had early syphilis there may have been, as stated, an opportunity for reinfection of his nervous system; if he had late syphilis, this is not the case. Whether he had early or late syphilis and if his spinal fluid is now completely negative, he has had enough treatment. The discrepancy between serologic results in laboratories A and B is certainly due to technical variation in the two laboratories and not to variation in the patient.

The spinal fluid examination should include cell count, quantitative estimation of the protein content, quantitative titration of the Wassermann test in amounts ranging from 0.1 to 1.0 cc., and colloidal mastic or gold curve.

If the spinal fluid is positive, the type of desirable treatment will depend on the ensemble of the spinal fluid picture. If the spinal fluid shows the paretic formula, treatment should be initiated with malaria to be followed by trypanamide.

VITAMIN AND MINERAL REQUIREMENTS
OF NORMAL DIET

To the Editor:—How can one tell whether a patient is getting sufficient mineral in his diet? Is it true that the average American gets more minerals and vitamins than he needs? How can one be sure that a patient taking no milk gets sufficient calcium?

M.D., Iowa.

ANSWER.—Since the availability of minerals differs according to the type of food, their source is an important consideration. Vegetables as a rule contain a less available form of calcium than does milk. Their iron is also probably not completely available. Sodium, potassium and magnesium, while required for health, are so plentifully distributed in foods that ordinarily they do not have to be considered in formulating dietary standards. The notion that the average American receives a greater supply of vitamins than he needs is not entirely compatible with the known facts. Exceptions must be made, for example, in the case of pregnant or lactating women. There is increasing evidence, however, that mild and frequently unrecognized deficiencies of some vitamins are more prevalent in this country than formerly was believed.

The "dietary standards," which are indications, not rules, are based on the minimum requirement for each substance plus an added 50 per cent, or in some cases 100 per cent, margin for safety. As expressed by H. C. Sherman (Chemistry of Food and Nutrition, ed. 5, New York, Macmillan Company, 1937, p. 520), for normal adults these standards are: calcium 0.68 Gm. (10 grains), phosphorus 1.3 Gm. (20 grains), iron 0.012 Gm. (0.185 grain). A discussion of the vitamin requirements appeared in *THE JOURNAL* Jan. 15, 1938, page 227.

TIME OF DEATH—BLEEDING AFTER DEATH

To the Editor:—1. When is a person judged to be dead, i. e., at what moment does death occur? 2. Would profuse bleeding from the ears and nose on one's arrival at the scene of an accident mean that a person was still alive? There are two people in the same automobile. One hour after the accident the coroner states that both are dead. The woman was bleeding profusely from the nose and ears one-half hour after the accident. 3. How long after death does one continue to bleed freely from a laceration or a skull fracture?

M.D., Indiana.

ANSWER.—1. Death has taken place when respiration and heart action have stopped permanently.

2. Yes, if the flow of blood continues longer than explainable by the running out, on change of position, of blood or bloody fluid accumulated in the ears and nose and adjacent parts. It is of course not possible that "profuse bleeding" from the nose and ears could go on continuously for half an hour after the heart has stopped beating. Is it excluded that what is called "bleeding profusely" may not have been due to the running out of the ears and nose of bloody cerebrospinal fluid?

3. With death the blood stops circulation; hence after death only the fluid blood in or about the parts involved can run out from a laceration or fracture. The amount of such "bleeding" will vary greatly in different cases and might well be influenced by change in the position of the body. To "bleed freely" in the usual sense is impossible after death.

ARTIFICIAL PRODUCTION OF URTICARIA
AND ALLERGY

To the Editor:—Is there any known way of producing urticaria in a normal person? Would it be possible by injecting some substances under the skin or by any other method to make a person sensitive with the result that urticaria would develop?

M.D., Minnesota.

ANSWER.—Urticaria can be artificially and temporarily produced in a normal person by any one of three methods: 1. It may be produced by the prophylactic or therapeutic injection of some form of animal serum, as horse serum (tetanic). A large percentage of persons who have had a manifestation known as "serum sickness"; urticaria is a prominent feature of this condition. 2. If an allergic donor gives blood for a transfusion, the nonallergic recipient may temporarily become hypersensitive to the antigen or antigens which caused the donor's symptoms; e. g., ragweed pollen, horse dander. Urticaria in the recipient may follow contact or ingestion of the offending substance. Fortunately such induced hypersensitivity is only temporary. Ramirez (Horse Asthma Following Blood Transfusion, *THE JOURNAL*, Sept. 27, 1919, p. 984) reported a case in which transfer of horse serum sensitivity followed the transfusion of a nonallergic recipient with blood obtained from a donor who had asthma from horse dander. This type of sensitization is rare in human beings. 3. In the classic method of testing by local passive transfer (Praisitz-Kustner reaction, *Centralbl. f. Bakt.* 86:160, 1921), blood is drawn from the allergic person and the serum is injected into the skin of a

normal person. About forty-eight hours later the injected site usually shows an itching wheal (urticarial reaction) when injected with antigens to which the donor is allergic. Other parts of the recipient's skin are usually negative to these antigens. Walzer (*J. Allergy* 1:231 [March] 1930) has also shown that these sensitized sites frequently develop urticarial wheals when an antigenic food, such as egg, is eaten. This local hypersensitivity likewise disappears in a few weeks. There is no known method by which a normal person can be made permanently hypersensitive so that he will show symptoms of urticaria, asthma or hay fever. Of course the "normal" person may not really be normal. He may, probably through inheritance, be potentially allergic; when his threshold of resistance has been exceeded, as by a large dish of crabmeat, urticaria may occur for the first time. It is known, however, that repeated exposure to certain weeds, such as primrose, can render most persons permanently hypersensitive; however, the symptoms produced are those of contact dermatitis (dermatitis venenata); the hereditary factor is absent in this condition.

GANGLION OF TOE

To the Editor:—A man, aged 30, about four months ago had an ingrown toenail on the right foot. I removed the lateral half of the nail. Removal was immediately followed by the flowing of a thick, colorless, gelatinous matter. He was relieved for two months, when he again returned with the same infected toe. I again performed a procaine block anesthesia and carried out the operation as described by Dr. R. W. Bartlett in *THE JOURNAL*, April 10, 1937, page 1257. The only tangible history obtainable is that about ten years ago he was playing football and hurt his toe, which became painful and swollen for a few days. About two years ago the toe became reddened and slightly swollen, again becoming normal with no ill effects. The swelling and redness recurred every few months or so until four months ago. Since operation a constant flow of this gelatinous material has been coming out of a sinus at the base of the nail leading down into the interphalangeal joint. What is the cause of this gelatinous material? What would be a proper diagnosis? Please outline a treatment. I have been treating the sinus with phenol; is this proper? Would it be advantageous to use a sclerosing agent?

M.D., Massachusetts.

ANSWER.—The clear gelatinous material discharged following operation on the toe is indicative of a ganglion, which may originate from the joint capsule or tendon sheath or of a bursa. Excision of the sac or bursa and the sinus tract is the desirable procedure. If this is not possible, thorough curettage of the sinus tract and the sac may lead to healing. Sclerosing solutions such as sodium morrhuate will at times lead to healing. If there is an opening into the joint, however, the use of a sclerosing solution is inadvisable because of the damage that may be done to the articular surfaces.

DERMATITIS FROM INVERT SUGAR FOR VARICOSE
VEIN INJECTIONS

To the Editor:—I am treating varicose veins on the lower extremity by injecting invert sugar. I used 10 cc. in the small veins on the dorsum of the foot and around the ankle, November 15; I used 10 cc. in the veins on the outer side of the leg, November 18. The patient came to the office November 21 with a dermatitis extending from the ankle to the upper third of the leg. The patient complained of severe burning and itching of the leg; there is also a slight dermatitis on both arms and on the sacral regions. Could this be due to the solution used?

M.D., Mississippi.

ANSWER.—Sensitization to drugs used for obliterating varicose veins is not uncommon; quinine, sodium morrhuate and potassium oleate are occasionally known to produce such reactions. However, it is difficult to conceive that a solution of invert sugar would produce sensitization unless one added some other ingredient, as an antiseptic or anesthetic, to the ampule. The solution might be tested for allergens with special reference to nitrogenous products, as impurities in the invert sugar. Such sensitizations may take the form of an itching dermatitis localized mainly to the injected areas or to the course of the vein; in other instances, a generalized urticaria develops and rarely an edema of the glottis with bronchial spasm.

ETIOLOGY OF INFLUENZA

To the Editor:—I recently received information that influenza is now known to be caused by a streptococcus. I did not know that the cause had been discovered. Is there now general agreement as to the causation?

M.D., Michigan.

ANSWER.—The evidence pertaining to a streptococcus as the cause of influenza is not generally accepted. Instead, a rather complete chain of evidence indicates that a filtrable virus is the primary causative agent of the disease. Isolated first by Smith, Andrewes and Laidlaw in London, England, in 1933, extensive studies have been conducted in this country by Francis

and his associates (THE JOURNAL, Aug. 21, 1937, p. 566). The virus has been recovered in a high percentage of cases of epidemic influenza, and the serums of the convalescent patients acquire a high titer of antibodies to the virus. The virus infects ferrets and mice and has also been shown after repeated passages in animals to be capable of inducing clinical influenza in man.

AIR SWALLOWING IN SMALL CHILD

To the Editor:—A boy aged 3½, intelligent and emotional, whose birth history is negative in every respect, cried severely during the first three months of his life and has already had eczema, measles, mumps and pneumonia. He had severe rachitis with an appearance of bony deformities. The parental history is not significant except that the father is highly emotional. The child is well nourished, of normal weight and height, somewhat active and somewhat pale, but development is normal. He has had "spells" once a month, beginning one year ago. The spells endure from five to six minutes and vary from two to twenty in a day, the average number being five or six. The spells are described as follows: He begins swallowing rapidly and audibly; this is followed by peculiar noises in the stomach and complaint of stomach ache, ending in the expulsion of flatus by rectum and his assertion "All better now."

M.D., Saskatchewan.

ANSWER.—The spells described are known as aerophagia, which is a spasmodic swallowing of air followed by eructation or flatulence and is often a symptom of hysteria. This condition may be classified under the functional coordination neuroses. It is stated that the boy is intelligent and emotional and that the father is highly emotional and that the spells occur once a month. This periodic occurrence is probably associated with periods of emotional stress. A sociologic investigation of the family life might throw considerable light on the causation of these spells.

POSSIBLE MONILIA INFECTION OF VAGINA

To the Editor:—The vaginal exudate from a pregnant patient almost at full term is very thick and has somewhat the appearance of necrotic tissue. There is little odor, and removing it from the membrane leaves a bright pink surface but no ulceration. This material has been removed from the vagina a number of times during the past few months. Stained smears show a large fungus occurring in broken up rods and staining poorly with methylene blue. There is no differential reaction with the Gram stain, there is a large amount of necrotic material and there are few pus cells. Cultures on Sabouraud medium show a growth and some brownish pigment production. However, I am unable to determine the type of fungus. What treatment is indicated? What type of fungus is responsible?

M.D., Georgia.

ANSWER.—The clinical picture is that of Monilia infection, although the evidence is insufficient for a certain diagnosis. There is no specific therapy. Mechanical cleansing of the surfaces and applications of 1 per cent gentian violet will probably effect a cure.

MEDICAL TREATMENT OF CANCER

To the Editor:—Two articles on cancer research have recently appeared in the press. One, concerned with oral administration of some substance in human beings, reported approximately 60 per cent cures; the other concerned the use of spleen extract in animals. Is authentic information available on the treatment or cure of cancer? My wife is now being treated for scirrhus carcinoma by x-rays.

M.D., California.

ANSWER.—The only accepted methods in the treatment of cancer today are by surgery, x-rays and radium. Any claim that the oral administration of some substance has resulted in the cure of human cancer in 60 per cent of the cases is totally without foundation. Spleen extract has been tried in the treatment of cancer in animals and man without success. Authentic information on the treatment and cure of cancer exists in the medical literature.

ANTITYPHOID SERUMS—MISTRETTA SERUMS

To the Editor:—In an article by Biagio Mistretta (*Policlinico* 44:2287 [Nov. 29] 1937) mention is made of the use of intravenous or intramuscular injections of 2 per cent phenolized artificial serum for the treatment of various infectious diseases. Can you inform me whether this method has been used in this country and the phenolized serum is available commercially? Will you also inform me whether the serum for typhoid discussed by C. J. McSweeney in the Dec. 4, 1937, issue of the *British Medical Journal* is commercially available in America?

HAROLD J. HARRIS, M.D., Westport, N. Y.

ANSWER.—The use of intramuscular injections of convalescent serum for the treatment of diseases is common, but we do not know of any reports from this country concerning the method described by Biagio Mistretta. Antityphoid serums are not now commercially available here.

TRICHLOROACETIC ACID CAUTERY IN EYE

To the Editor:—Can you give information concerning trichloroacetic acid in pencil form used for cauterizing in eye work? Who makes it and where can it be produced?

D. W. BRICKLEY, M.D., Marion, Ohio.

ANSWER.—We have no information on pencils of trichloroacetic acid. A tightly wound cotton applicator on a tooth pick dipped in the solution of trichloroacetic acid may be used and the area of prolapsed iris carefully touched so that no excess of solution is used and that none touches the cornea. It is unnecessary to neutralize the acid. The iris becomes gray-white immediately after the drug has been applied. The surrounding conjunctiva becomes red the next day and the iris is again black. This must be repeated several times. It may be used daily for ten days in some cases and three times a week for three weeks in others. The treatment should be used only in small prolapses in which there is no danger of the solution entering the anterior chamber.

TREATMENT OF HODGKIN'S DISEASE

To the Editor:—Is there any treatment for Hodgkin's disease other than with x-rays and arsenic? In my patient the process has extended into the mediastinum and abdomen.

W. C. PERRY, M.D., Louisburg, N. C.

ANSWER.—There is no successful treatment for Hodgkin's disease. X-rays or radium properly applied contribute to the patient's comfort and may perhaps lengthen his life, although the latter is questionable. Arsenic is thought to have a beneficial effect on the size of the glands. Various emulsions and other preparations have been used in the form of vaccine therapy but without proved benefit.

INCOMPATIBILITY OF EPHEDRINE AND IODINE

To the Editor:—What is the incompatibility between iodine and ephedrine compounds? One manufacturer of an iodine solution states on the label of his package, "Incompatible with ephedrine and ephedrine compounds."

FRANCIS BURTON BLACKMAR, M.D., Columbus, Ga.

ANSWER.—The statement that iodine is incompatible with ephedrine and ephedrine compounds is correct. When ephedrine hydrochloride in aqueous solution is mixed with either the tincture of iodine or the compound solution of iodine, a precipitate results that is soluble in alcohol. When to ephedrine alkaloid in alcoholic solution is added either the tincture of iodine or the compound solution of iodine, the liquid remains clear but gradually becomes decolorized on standing, as happens with iodine in other alkaline solutions.

SPLIT FINGER NAILS

To the Editor:—In THE JOURNAL May 19, 1928, was an article by W. W. Carter on split finger nails. His method of treatment by the use of sutures through holes drilled in the finger nail appears excellent. However, I suffered from this trouble and the method described did not seem satisfactory to me because I had to scrub my hands frequently. I did not like the idea of the holes or the roughness of the knots. I feared for the surgical cleanliness of my hands, not only on account of the uncertainty of the thoroughness of the mechanical cleansing but also because of the ease with which these recesses could become contaminated and probably hold foreign material. Finally I arrived at the following procedure, which has given good results: Celluloid dissolved in amyl acetate was painted on the thumb nail. Several coats were applied, each coat being allowed to dry before the succeeding coats were applied. One treatment will last for two or three weeks as a rule. A convenient and cheap source of celluloid is old unbreakable watch crystals which the jeweler is ready to discard. One small crystal dissolved in about 20 cc. of amyl acetate makes a solution of about the right consistency.

S. M. MACLEAN, M.D., Tacoma, Wash.

HIGH HUMAN TEMPERATURE

To the Editor:—The subject of high human temperature is discussed in *Queries and Minor Notes* in THE JOURNAL, February 5, page 461, and April 2, page 1127. Regarding the highest temperature that the human body can reach and still survive, the following (taken from Reid, W. D.: One Hundred and Fifty-Eight Cases of Heat Prostration Treated at the Boston City Hospital, July 2-13, 1911, *Boston M. & S. J.* 165:643 [Oct. 26] 1911) may be of interest:

Temperature	Cases	Deaths
—105	10	1
105—106	8	4
106—107	8	5
107—108	6	6
108—109	14	10
109—110	15	12

The high mortality, 58 per cent, in these cases of heat stroke was doubtless influenced by the complications: At admission to the hospital: alcoholism, failing heart, edema of the lungs and convulsions. Subsequent: delirium tremens, persistent coma, pneumonia and recurrence of fever.

WILLIAM D. REID, M.D., Boston.

Medical Examinations and Licensure

COMING EXAMINATIONS STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in *THE JOURNAL*, May 14, page 1697.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II. Examinations will be held in all centers where there is a Class A medical school and five or more candidates who wish to write the examination, June 20-22 and Sept. 12-14. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: Oral examinations for Group A and B applicants will be held at San Francisco, June 13-14. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: Written examination will be held at various centers of the United States and Canada, Oct. 17. Final date for filing applications is Sept. 1. Chairman, Dr. Walter L. Biering, 406 Sixth Ave., Suite 1210, Des Moines, Iowa.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: General oral, clinical and pathological examinations for all candidates (Groups A and B) will be conducted in San Francisco, June 13-14. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: San Francisco, June 13; Washington, D. C., Oct. 8; Oklahoma City, Nov. 15. All applications should be filed immediately and case reports, in duplicate, must be filed not later than sixty days before the date of examination. Sec., Dr. John Green, 3720 Washington Blvd., St. Louis, Mo.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Chicago, June 10-11. Sec., Dr. Fremont A. Chandler, 6 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: San Francisco, June 10-11. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PATHOLOGY: San Francisco, June 13-14. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PEDIATRICS: Detroit, October 26; Rochester, N. Y., November 13; and Oklahoma City, November 15. Sec. Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: San Francisco, June 11. Sec., Dr. Walter Freeman, 1028 Connecticut Ave. N.W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: San Francisco, June 10-12. Sec., Dr. Byrl R. Kirklin, 102-110 Second Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: Examination for candidates living along the northeastern and southeastern seaboard and western part of the United States, latter part of May. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

AMERICAN BOARD OF UROLOGY: San Francisco, June 11-13. Sec., Dr. Gilbert J. Thomas, 1009 Nicollet Ave., Minneapolis.

District of Columbia January Report

Dr. George C. Ruhland, secretary, Commission on Licensure, reports the written examination held at Washington, Jan. 10-11, 1938. The examination covered 9 subjects and included 60 questions. An average of 75 per cent was required to pass. Eight candidates were examined, all of whom passed. Nine physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
George Washington University School of Medicine....	(1936)		81.3,
83.8, 84.6, 87.8, 90.3			
Georgetown University School of Medicine.....	(1936)		86.3
Long Island College of Medicine.....	(1936)		83.8
Temple University School of Medicine.....	(1935)		78.5

School	LICENSED BY ENDORSEMENT	Year Grad.	Per Cent
George Washington Univ. School of Medicine (1935),	(1936) N. B. M. Ex.		
Georgetown Univ. School of Med., (1934), (1935),	(1936, 3) N. B. M. Ex.		
University of Louisville School of Medicine.....	(1934) N. B. M. Ex.		
Duke University School of Medicine.....	(1935) N. B. M. Ex.		

Hawaii January Examination

Dr. James A. Morgan, secretary, Board of Medical Examiners, reports the oral and written examination held at Honolulu, Jan. 10-13, 1938. The examination covered 10 subjects and included 80 questions. An average of 75 per cent was required to pass. Two candidates were examined, both of whom passed. Two physicians were licensed by endorsement after an oral examination. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of California Medical School.....	(1935)		84.8
Loyola University School of Medicine.....	(1936)		78.2
School	LICENSED BY ENDORSEMENT	Year Grad.	Per Cent
College of Medical Evangelists.....	(1935) N. B. M. Ex.		
University of Pennsylvania School of Medicine.....	(1935) N. B. M. Ex.		

Book Notices

Surgical Diseases of the Mouth and Jaws. By Earl Calvin Padgett, B.S., M.D., F.A.C.S., Associate Professor of Clinical Surgery, University of Kansas School of Medicine, Kansas City, Kansas. Cloth. Price, \$10. Pp. 807, with 334 illustrations. Philadelphia & London: W. B. Saunders Company, 1938.

The material of this book covers a much broader field than the title would indicate. Medical diseases and some surgical conditions of the pharynx, larynx, esophagus and neck, as well as plastic surgery of the face, are included. These subjects would not be looked for in a book with this title. Dr. Padgett has attempted, as he states in his preface, to cause his book to appeal to the dental student, the medical student, the dentist, the physician, the surgeon, the nose and throat specialist, the dermatologist and the radiologist. Although this is a difficult task, as is evident from the arrangement of the book, it well reflects the breadth of the author's interests as teacher and surgeon. The author stresses the value of a broad knowledge of gross and microscopic pathology. The book is well illustrated with diagrams, photographs of patients, roentgenograms and photomicrographs. The chapters on plastic surgery are excellent, particularly the chapter on congenital deformities; they are indicative of wide experience in this field. The student will find this book a very careful review of the literature and an excellent summary of the material under discussion. Some surgeons would like to read, in subsequent editions, more material springing from the author's own considerable surgical experience.

Mentality and Homosexuality. By Samuel Kahn, B.S., M.A., M.D., Associate Attending Neurologist at the City Hospital and Central Neurological Hospital, New York. Cloth. Price, \$3. Pp. 249. Boston: Meador Publishing Company, 1937.

This small book gives a perfectly clear and accurate description of the homosexuals interviewed and studied by the author in the prisons at Blackwell's Island, New York. One is struck not only with the clarity of description but with the honesty of the writer, who puts things down exactly as he saw them without any particular theory to promulgate. The book will be a welcome addition to the libraries of those who take a psychoanalytic view of homosexuality. Those, however, who take the stand that homosexuality is, in the largest number of cases, due to endocrine influences and to the hormones poured into the system by the sex organs of the individual will have much to criticize in this work. Like all psychoanalysts, the author hardly makes any mention of the sex organs as the cause of the condition except in a slight reference that the endocrine system among others should be investigated.

The author in his accurate description of the homosexual brings out the fact that, aside from the particular anomaly, the homosexual differs little from other people, that he has the same vices, the same virtues as the rest of mankind and that his anomaly does not prevent him from becoming a great genius. The author also brings out the fact that the homosexual does not consider himself a degenerate but that in reality (and this is distinctly contrary to psychoanalytic conception) his loves and attractions are distinctly in accord with his endocrine reactions. When one considers that in animals the sex attractions and desires can be changed by the investigators simply by removing the sex organs of the animal and substituting those of the opposite sex, without any change in the environment of the animal, the cause of homosexuality in the human race can be easily understood by comparison and inference. When at autopsy or at operation in some of these human homosexuals one finds sex organs of the opposite sex in the body, and also when one finds in some of these homosexuals that the ratio between the male and the female sex hormones in the blood is disturbed, one need not look for environment or infantile accidents as a cause of the condition but conclude that it is the endocrine hormones which in the majority of cases are the cause of the abnormality.

Although the author is a psychoanalyst and views everything from the standpoint of psychoanalysis, his own accurate description of the homosexuals would constitute the greatest argument in favor of the endocrine rather than the psychoanalytic

conception of homosexuality. He states as a fact that most of the male homosexuals are uncircumcised. This is exactly in line with what most observers in this field have brought out, namely, that the Jews as a race have few homosexuals. Now, were the psychoanalytic conception of homosexuality correct, this race in particular should be full of homosexuals. The poorer members of this race with their proverbial large families have been living in the poorest and cheapest tenement houses, often a family of eight or more members living in three or four rooms, where it is practically impossible to keep the sexes apart in childhood and even in adolescence. When one considers also that for centuries this race has been cooped in ghettos all over the world, also living in small and inadequate quarters, were the psychoanalytic origin of homosexuality correct, namely, that in some of the cases the condition is due to a child seeing the sex organs of the opposite sex, one would again naturally expect a large amount of hereditary homosexuality in this race and yet the very reverse is the fact.

The author states that the treatment of homosexuality is really so complex that volumes can be suggested, and yet no definite results can be promised. He further states that he does not believe that a reliable prognosis can be given with regard to active homosexuality. This is in line with the observations of other authors who treat the condition on psychoanalytic lines, some of whom have definitely stated that they have never cured a case of homosexuality. In view therefore of their own honest conclusions and statements of fact, one can wonder why the psychoanalyst should persist in his theory when he admits that treatment according to this theory is practically never successful.

The book gives much clear and distinct information about homosexuals in prison life, information which cannot be obtained from any other source.

The Dissection and Study of the Sheep's Brain as an Introduction to the Study of the Human Brain. By James Wilkie, B.Sc., Department of Biology, Guy's Hospital Medical School. Foreword by Professor T. B. Johnston, Guy's Hospital Medical School. Cloth. Price, \$2.25. Pp. 95, with 53 illustrations. New York & London: Oxford University Press, 1937.

This little manual will be gratefully received by all students of comparative mammalian neuroanatomy and all medical students who begin their study of the gross anatomy of the brain with the brain of a sheep. The book is clearly and simply written. In fact it at times descends to a juvenile level somewhat beneath that of the students for whom it is intended. The text presents a carelessness with the English language, a colloquialism, not anticipated in a book from this source. For instance, the author uses "pia" for pia mater, "medulla" for medulla oblongata, "cranial" for cranial nerve, "pituitary" for pituitary body, and so on. "In front" and "behind" are used to mean ventral and dorsal as well as cephalad and caudad, at times in the same or neighboring paragraphs and to the confusion of the reader. The illustrations, pen and ink drawings by the author, are very good. Two minor errors are noted in them. In figure 2 the sixth cranial nerve is not identified and in figure 42 "inf. cap" is used where int. cap. is intended.

Pulmonary Tuberculosis in Practice: A Modern Conception. By R. C. Wingfield, B.A., M.B., B.Ch., Medical Superintendent, Brompton Hospital Sanatorium, Frimley. Cloth. Price, \$2.50. Pp. 122, with 25 illustrations. Baltimore: William Wood & Company, 1937.

Wingfield divides tuberculosis into its various phases of development from the time the tuberculin test first becomes positive to the advanced stage of the disease. The various steps are illustrated graphically in one large chart. He states that the student in medical school "learns next to nothing about his main tasks, namely, the detection of the disease in its treatable stages and the supervision of his successfully treated cases." As "present-day teaching and present-day textbooks show him the moderately advanced case during its symptom-producing active stage and almost totally ignore the vitally important earlier half of the development of the disease both in its clinical and pathological aspects," the book was prepared to provide a comprehensive and logical picture of the pathogenesis of chronic pulmonary tuberculosis, as well as the methods of treatment appropriate for each stage of the disease. Attention is called to the fact that our knowledge of the partial active immunity

produced by the primary infection is, indeed, scanty and that we have no method of measuring such immunity. Under the discussion of diagnosis, emphasis is placed on the fact that the disease in its reinfection form in nearly every case establishes itself without causing symptoms of sufficient gravity to alarm its victim. With reference to the use of the x-rays in diagnosis he says "It is to be hoped the day will come when the x-ray will be as freely used as the clinical thermometer," although he points out that a roentgenogram "simply demonstrates that there is an infiltration of the lung but tells very little as to the character or the cause of the infiltration; it may be nontuberculous." He emphasizes the extreme importance of assembling information from all phases of an examination before arriving at a final diagnosis. Under treatment all procedures are discussed from strict rest in bed through the various forms of collapse therapy. Complications, such as hemorrhage, pleural effusion, spontaneous pneumothorax and tuberculous laryngitis, are given adequate consideration. Throughout the book Wingfield emphasizes the great importance of the general practitioner in the diagnosis, treatment and prevention of the disease. This book is sufficiently comprehensive as to be of value to all physicians engaged in the diagnosis and treatment of tuberculosis.

Involutive und idiopathische Angstdepression in Klinik und Erbllichkeit. Von Dozent Dr. K. Leonhard, Oberarzt der Nervenkl. in Frankfurt a. M. Boards. Price, 7 marks. Pp. 116, with one illustration. Leipzig: Georg Thieme, 1937.

The author presents his investigations of the nosologic and idiopathic features of forty-two cases of anxiety and agitated psychoses, chiefly depressions, in both men and women. His conception is a modification of the classification of Kraepelin, which separated the involuntional melancholias from the manic-depressive cases. Leonhard concludes from a study of his material that there are periodic anxiety and agitated depressions occurring in younger persons, which are "idiopathic" and should not be included among the manic-depressive group. He finds a strong hereditary basis for these psychoses and considers them identical with the more typical involuntional agitated depressions, because of their symptomatologic and hereditary similarities. The case material is presented with a brief clinical description of each psychotic episode and a brief description of psychopathic members of the family. The discussion concerns itself exclusively with phenomenologic and hereditary data, completely disregarding the personality, experiential and biographic features and their dynamic implications. The finding of a familial incidence in the affective psychoses is well recognized and throws no real light on their etiology or pathogenesis. It is felt, therefore, that this book has little to recommend itself to the American psychiatrist.

Concepts and Problems of Psychotherapy. By Leland E. Hinsie, M.D., Professor of Clinical Psychiatry, College of Physicians and Surgeons, Columbia University. Cloth. Price, \$2.75. Pp. 199. New York: Columbia University Press, 1937.

There has been a need for some time for a comprehensive book that would cover the use of psychotherapy by physicians. Hinsie has attempted somewhat to make such a volume for the use of the individual who is devoting his life to mental treatment. Unfortunately he falls short of his goal. It is quite true that a young psychiatrist beginning his work in this field would be interested in knowing something about the various types of psychotherapeutics which are in use today. He undoubtedly would want more than just a description of procedures and would want an idea of precisely how they are used, by whom they should be used, and, if they are not easily translated from the printed words to action, how they can be learned. Unfortunately, however, all that Hinsie's book contains is a brief summary of the more conventional freudian ideas, supplemented with chapters devoted, first, to Adolph Meyer's psychobiology and, secondly, to the work of Adler and Jung. In none of these chapters is anything new presented. Many of the recent books on psychoanalysis which are written by reputable authorities, such as Kubie's, will give a better picture of this field than has Hinsie. One gets the idea from his description of Adolph Meyer's psychobiology that he does not fully understand what Meyer is driving at and that the principles as enunciated by the doyen of American psychiatrists have

been mastered only in terminology and that their actual application and an understanding of them is not here thoroughly demonstrated by the author. As for Adler and Jung, one would naturally expect to find a tendency to minimize the contributions of these individuals. This, of course, is due to the fact that Hinsie's basic training is primarily along the lines of Freudian psychoanalysis. More interesting perhaps than Hinsie's own work is a supplement by Carney Landis showing statistically the way in which treatment is being used in mental hospitals today. This presentation is dramatic, interesting and one that should be taken from its setting in the present volume and presented individually. Hinsie does, however, offer a conclusion which is interesting and encouraging along the lines of the adoption of psychotherapy to active treatment work with mental cases. The book closes with a satisfactory bibliography.

Die Bluttransfusion als Mittel zur therapeutischen Umstimmung. Von Prof. Dr. Rudolf Stahl, leitender Arzt der Inn. Abteilung des Krankenhauses Bethanien, Breslau. Veröffentlicht von der Schlesischen Gesellschaft für vaterländische Cultur. Paper. Pp. 36, with 21 illustrations. Breslau: Ferdinand Hirt, 1937.

This brochure emphasizes the after-effects obtainable from blood transfusion, which are likened to parenteral alterative influence (umstimmungs therapie). Immediately following the transfusion there is a biphasic tendency: phase I with rising temperature, sympathicotonia, increase in blood calcium, tendency to acidosis and a leukocytosis change in the direction of myeloid character, with increased basal metabolism and blood sugar. The second phase is characterized by the opposite tendencies: falling temperature, vagotonia, increased potassium in blood and alkalosis, lymphocytic increase and diminution in basal metabolism and the sugar content of the blood. This, however, is not the end of the changes, because the author has been able to detect protracted excitation processes which may reach their height between the fifth and fourteenth days after the transfusion and last as long as from three to four weeks. This shows itself especially in a secondary increase in erythrocytes, frequently with the appearance of reticulocytes. There is also an increase in the antibacterial agglutinin titer. He therefore advises blood transfusion not only for restorative purposes in anemia but also for the hemostatic value as well as for the purpose of stimulating the reparative functions of the system. He considers such stimulation particularly valuable in peptic ulcers and in cases of ulcerative colitis that have led through bleeding to secondary anemia, but he considers these of value even in cases in which anemia is not marked. In sepsis suitable blood transfusions may be life saving. He prefers direct transfusion by means of Percy's paraffin cylinders most especially in infectious diseases, but he considers indirect transfusion or transfusion of preserved blood as being worthy of trial. He deplors, however, anything that tends to lessen the glamour that surrounds the transfusion of blood from man to man.

Artificial Fever Produced by Physical Means: Its Development and Application. By Clarence A. Neymann, A.B., M.D., F.R.S.M., Associate Professor of Psychiatry, Northwestern University Medical School, Chicago. Cloth. Price, \$6. Pp. 294, with 68 illustrations. Springfield, Illinois, & Baltimore: Charles C. Thomas, 1938.

This is a careful study of the various methods of production of fever therapy by physical means which describes the basic principles, history, physiology and technic of application of fever therapy for various diseases, particularly dementia paralytica, syphilis of the central nervous system, primary and secondary syphilis, multiple sclerosis, chorea minor, arthritis, gonorrhea and asthma. The author seems to lay undue stress on the value of producing fever by means of electromagnetic induction and seems somewhat biased in favor of this method. Nevertheless he does give careful descriptions of other methods of treatment. He is a mite too concerned about his own priority in certain phases of this investigation and a bit too prone to the use of the first personal pronoun. One may be startled by the recommendation that if the patient's temperature becomes too high he should be bathed with ice water. It is generally felt that tepid sponges and fanning of the nude body will produce much more rapid drop in temperature, whereas applications of ice water tend to constrict the peripheral capillaries and prevent the radiation of heat. Aside from these minor criticisms, the book

can be recommended highly as a careful, workmanlike, scientific contribution by an author who is justly enthusiastic about the results to be obtained with this fairly new therapeutic procedure. The work is exhaustive, and an excellent bibliography is attached. The book can be recommended to all physicians interested in fever therapy and in the various diseases which are amenable to this procedure.

Dixon's Manual of Human Osteology. Revised by E. R. Jamieson, M.D., Senior Demonstrator and Lecturer on Anatomy, University of Edinburgh. Second edition. Cloth. Price, \$7.50. Pp. 465, with 180 illustrations. New York & London: Oxford University Press, 1937.

The first edition of this book was published in 1912 by Prof. A. Francis Dixon of Trinity College. It was written for junior students who began their study of gross anatomy with osteology. The second edition has been rewritten by Dr. E. B. Jamieson of Edinburgh for the same students and with the same purpose. It is half as big again as was the first edition (465 pages as against 301) because Dr. Jamieson has found it advisable to include an account of many of the soft parts associated with the bones. So much material of this kind has been introduced that this edition might well be called an introduction to practical gross anatomy. He has added also an account of the development of bone and devoted more attention to joints and to the movements of joints. The illustrations are for the most part the excellent ones that appeared in Dixon's first edition; Dr. Jamieson has, however, substituted for some of them illustrations taken from Cunningham's *Practical Anatomy* and has added a few. The account of the development of bone being intended for junior students is a plain statement of the generally accepted views. Controversial opinions are omitted. No mention is made of Policard's views of the function of osteoclasts and osteoblasts. The teleologic idea that structures and processes are adapted in advance to demands which appear very much later is accepted without question. Students who have time to make a special study of bone before beginning dissection of the human body will find this book of great help in carrying on such studies.

Handbuch der experimentellen Pharmakologie. Begründet von A. Heffter. Ergänzungswerk. Herausgegeben von W. Heubner, Professor der Pharmakologie an der Universität Berlin, und J. Schüller, Professor der Pharmakologie an der Universität Köln. Band V: Enthaltend Beiträge von H. Schlossberger, et al. Paper. Price, 39.60 marks. Pp. 307, with 24 illustrations. Berlin: Julius Springer, 1937.

Heffter's handbuch is the most extensive and complete work on pharmacology. Additions to it are indispensable in research libraries. The present volume deals with chaulmoogra oil and its allies by Prof. H. Schlossberger of Berlin, coramin and metrazol by Prof. Fritz Hildebrandt of Giessen, the harmine group of alkaloids by Prof. J. A. Gunn of Oxford, and insulin by Profs. E. M. K. Geiling of Chicago, H. Jensen of Baltimore and G. E. Farrar of Philadelphia. The history, pharmacology and extensive literature of these drugs are given. Chaulmoogra oil has been used in Hindu medicine for a thousand years. One might therefore expect an extensive ancient literature. However, until 1854 its use in leprosy was not generally recognized, and not until 1904 was the attention of the scientific world drawn to it. One hundred and twenty-seven pages are devoted principally to its chemistry and pharmacology. Pyridine-beta-carbonic acid diethylamine (coramin) is a medullary stimulant resembling in action camphor, nicotine and metrazol. Its value in medicine has not been established. The discussion of its pharmacology occupies thirty-two pages. Pentamethylenetetrazol (metrazol) was first prepared in 1924. It is extensively used at present in the treatment of psychosis and is of vital interest. Its action is somewhat similar to that of picrotoxin, a medullary stimulant. Its pharmacology is given in thirty-two pages. Its therapeutic use is not described. The harmine group of alkaloids is described in English. The plant from which these alkaloids are obtained is indigenous to southern Russia, the Balkans and the eastern Mediterranean countries as far as Tibet. Among other actions, it dilates the coronary vessels and has a quinine-like action on the uterus, but no therapeutic use of these actions is suggested. Insulin is also described in English. The discussion is extensive and complete (eighty-three pages). One can do justice to it only by saying that it is perhaps the best monograph

graph on the subject of insulin. Heffter's handbuch is primarily for research workers. The present volume, however, will be found valuable for clinicians interested in the uses of chaulmoogra oil, metrazol or insulin. Unlike most of the earlier volumes, this one contains both subject and author indexes, which add greatly to its value.

A Method of Anatomy: Descriptive and Deductive. By J. C. Boileau Grant, M.C., M.B., Ch.B., Professor of Anatomy in the University of Toronto. Cloth. Price, \$6. Pp. 650, with 564 illustrations. Baltimore: William Wood & Company, 1937.

This is a short textbook in anatomy, evidently intended for use with dissecting manuals and atlases. The method to which the title refers is one by which the author seeks to give the medical student a less formidable textbook than the books commonly used; the latter are discouragingly large and their arrangement is systematic, that is, by systems—bones, muscles, arteries and nerves; the arrangement of this book is regional. Many attempts to give shorter anatomies to medical students have been made and most have failed. The student found them insufficient either for his own interest or for examinations, and though the standard textbooks were long, they were attractive, logically arranged and beautifully illustrated. So students preferred them, doing their own selecting and possessing a comprehensive work for lifelong reference. But the time devoted to dissection in the medical curriculum is much less than it was thirty years ago and many students would welcome a really good, practical introductory work that would be enough for the first examinations in anatomy. This book is the best of its kind that has appeared. It is probably adequate for medical, that is, clinical, anatomy. The material is presented logically and made somewhat easier to remember by skilfully worded correlations. It is evident that it was written by an experienced, conscientious and successful teacher. It would be of still more service to students if it contained directions for dissection, with lists of structures exposed at each stage. It does not include surface anatomy or the anatomy of the brain. A few mistakes are perhaps inevitable in a first edition, being corrected in later ones; for example, in terms, as rectovesical for recto-uterine on page 143, or of fact, as the statement on page 132 that the longitudinal muscle does not form a complete cover for the large intestine. The illustrations are for the most part original diagrams which the student can advantageously reproduce; he would depend on the excellent atlases now available for more elaborate illustrations.

Bentley and Driver's Text-Book of Pharmaceutical Chemistry. Revised by John Edmund Driver, Ph.D., M.Sc., F.I.C., Lecturer on Chemistry in the University College of Nottingham. Third edition. Cloth. Price, \$7.50. Pp. 624, with 48 illustrations. New York & London: Oxford University Press, 1937.

This is a textbook for students and the arrangement is logical. The inorganic portion follows the periodic system so far as practicable, and the organic portion follows the classification generally accepted by organic chemists. Since this is intended to cover a laboratory course, it would make an excellent laboratory manual. The methods used are, as a rule, chosen for simplicity and economy. The use of a Duboscq colorimeter is not mentioned, but colorimetric determinations are made with perforated blocks of wood containing test tubes of colored substances or by the use of Nessler tubes. Gas analysis is made in Hempel burets. The use of melting point apparatus, pycnometers, viscosimeters, refractometers and polarimeters is described. The colored chart of Clark and Lub's indicators, together with methyl orange, cochineal and litmus, is given. The tests for heavy metals might be applied to biochemistry after the destruction of organic matter. In the detection of organic compounds, usually a number of tests are given (and since most of these are not absolutely specific, the confirmation by a number of different tests is often desirable). The later chapters contain many substances of special physiologic interest and they are treated usually in a theoretic manner without laboratory methods being given for their estimation. It is hardly probable that this book would replace Autenrieth and Warren's Detection of Poisons for the research worker. The most important alkaloidal precipitating agents are not mentioned and no adsorption methods of isolating alkaloids are given.

The Role of Chemiotaxis in Bone Growth. By A. P. Bertwistle, M.B., Ch.B., F.R.C.S. Cloth. Price, 8s. 6d. Pp. 59, with 32 illustrations. London: Henry Kimpton, 1937.

The author states that the object of the book is to describe disruptive chemotaxis, indicating the power of certain hard substances to draw into them certain soft lining substances and to lay down a law "that whenever young fibrous tissue, particularly young blood vessels, come into contact with bone or a calcified deposit new bone formation occurs." Bone development is concisely reviewed. It is asserted that in the process of ossification calcium is always laid down first; then young fibrous tissue grows in and forms bone. This is true however only for enchondral ossification, so that the author is faced with the necessity of finding another explanation for intramembranous or fibrous ossification. A discussion of pathologic processes of ossification follows, but it is difficult to see wherein the author contributes anything more than a new phrase in his attempt to shed new light on the biophysical and biochemical processes of ossification.

Atlas of Skeletal Maturation. By T. Wingate Todd, M.B., Ch.B., F.R.C.S., Henry Willson Payne Professor of Anatomy, Western Reserve University, Cleveland, Ohio. With the collaboration of colleagues and assistants, 1926-1936. Cloth. Price, \$7.50. Pp. 203, with 75 illustrations. St. Louis: C. V. Mosby Company, 1937.

The author and his collaborators have studied skeletal maturation by means of serial roentgenograms of a large number of selected males and females at frequent intervals throughout the growth period. Standard observations have been set up at three or six months intervals from three months after birth to 16 years in girls and 19 years in boys, at which dates maturity is reached. Forty standard roentgenograms of the hand of the male and thirty-five of the female covering the period of maturation are reproduced and the changes recorded with great precision. Maturation is observed to proceed more rapidly in the female throughout the entire period but more noticeably after the first year. This is a masterly study of skeletal growth and it is to be hoped that the author will publish similar studies which he indicates he has made of the rest of the skeleton.

Voprosy obshchey i chastnoy rentgenologii. Trudy Gosudarstvennogo Ordena Lenina Instituta Usovshenshtvovaniya Vrachey im S. M. Kirova, Kafedra rentgenologii, Tom vtoroy. Pod obshchey redaktsiyei B. E. Rozina. Otvetsvennyy redaktor S. A. Reynberg. [Problems of General and Special Roentgenology. Works of State Order of Lenin Institute for Training of Physicians, named after S. M. Kirov, Department of Roentgenology, Volume II.] Cloth. Price, 15 rubles. Pp. 296, with illustrations. Moscow & Leningrad: Izdatelstvo Akademii Nauk SSSR, 1937.

This, the second volume issued by the chair of roentgenology of the Kirov Postgraduate Institute in Leningrad, is a collection of papers dealing predominantly with problems of experimental character. The subjects investigated are those of experimental vasography, roentgenologic study of the physiology of respiration and the circulation, the study of the diagnosis and the course of the diseases of the gastrointestinal tract, and, in particular, of ulcerative disease, as well as the study of the biologic effects of the roentgen rays. The roentgenologic approach to physiologic problems opens up possibilities heretofore but superficially investigated. The shift from investigations of a purely morphologic character to those of the functional activities of the human organism was made possible thanks to the recent advances in the roentgenologic methods and technic. The papers present much that should be of interest to the scientific roentgenologist. They are well illustrated and supplemented with exhaustive bibliographic references. The appearance of the volume suggests that the Russians are making progress in the art of book publishing.

Fractures and Dislocations for Practitioners. By Edwin O. Geckeler, M.D., F.A.C.S., F.A.A.O.S. Cloth. Price, \$4. Pp. 252, with 213 illustrations. Baltimore: William Wood & Company, 1937.

The author's purpose in writing a book on fractures and dislocations for general practitioners was to present the subject in a condensed manner without omission of important details. He desired to have the first physician who attended accident cases acquainted with one good method of treatment for every type of fracture and dislocation. Early correct care prepares the way for good end results. The book fulfils these requirements. One could easily take issue with many statements and therapeutic procedures but the author selected the most prac-

tical methods in order to facilitate the emergency therapy for the general practitioner. There are two parts, one on fractures and the other on dislocations. Every bone and joint fracture and dislocation is presented with a discussion of etiology, examination, complications, prognosis, immediate treatment and follow-up treatment. The manuscript is written in an easily understood manner. The illustrations, photographs and roentgenograms are well selected, clear and adequate.

Index médico-pharmaceutique. Par N. T. Deleanu, professeur à la Faculté de pharmacie de Bucarest, René Fabre, professeur à la Faculté de pharmacie de Paris, et L. Coniver. Avec la collaboration du Prof. M. Tiffeneau, et al. Préface de M. Maxime Radals, membre de l'Académie de médecine. Cloth. Price, 150 francs. Pp. 756. Paris: Masson & Cie, 1937.

This is a collaboration of Rumanian and French pharmacists to present "clearly and precisely" for physicians' and pharmacists' use the important facts regarding drugs and preparations. The main portion of the book is devoted to an alphabetically arranged index giving these facts in tabular form. There are introductory chapters on toxicology, pharmacodynamics and galenic preparations. Chapters on endocrine therapy, vaccines and serums and vitamins and a brief chapter on physical therapy and on narcotics and the laws relating to their dispensing conclude this book.

Miscellany

REGULATIONS GOVERNING ADMISSION TO UNITED STATES NARCOTIC FARM

The Surgeon General of the U. S. Public Health Service has forwarded the following regulations for admission to a U. S. narcotic farm, effective April 1, 1938:

No person shall be eligible for treatment or confinement in a United States narcotic farm unless he is an addict as hereafter defined and then only: (1) if such person has been sentenced to confinement on conviction of an offense against the United States, including convictions by general courts-martial or by consular courts; (2) if such person is completing a sentence of confinement at a narcotic farm and applies in accordance with the requirements of these regulations for further custodial care and treatment beyond the expiration of sentence; (3) if such person is placed on probation by any court of the United States or other federal authority which has imposed as one of the conditions of such probation that he will submit himself for treatment until discharged as cured, or (4) if such person, being not an unconvicted alien, voluntarily signs an application requesting custodial care and treatment in accordance with the requirements of these regulations. On admission to a narcotic farm as provided by these regulations, such four classes of addicts will be designated and hereafter referred to in these regulations as "prisoners," "ex-prisoners," "probationers" and "voluntary patients," respectively; collectively, they will be designated and hereinafter referred to as "addicts," "inmates," "patients" or "beneficiaries."

The term "addict" wherever used in these regulations means any person who habitually uses a habit-forming narcotic drug so as to endanger the public morals, health, safety or welfare or who is or has been so far addicted to the use of habit-forming narcotic drugs as to have lost the power of self control with reference to his addiction.

The terms "habit-forming narcotic drug" or "narcotic" wherever used in these regulations mean opium and coca leaves and the alkaloids derived therefrom, the best known of these alkaloids being morphine, heroin and codeine, obtained from opium, and cocaine derived from the coca plant; all compounds, salts, preparations or other derivatives obtained either from the raw material or from the various alkaloids; Indian hemp and its various derivatives, compounds and preparations, and peyote in its various forms.

A prisoner shall be admitted to a narcotic farm for treatment and confinement therein, on presentation to the medical officer in charge of such farm of a copy of the sentence and/or commitment, or other certificate showing the conviction, sentence of confinement and commitment of the prisoner, accompanied by

an order by the authority vested with the power to designate the place of confinement of the prisoner or of the authorized representative of such authority, designating such narcotic farm as the place of confinement and certifying that such convicted person is an addict. Such documents shall be supplemented by the certificate, or a copy thereof, to be executed by the prosecuting officer after conviction and sentence on a farm prescribed by the Surgeon General, stating his belief that the convicted person is an addict, his reasons for such belief, and all pertinent facts bearing on such addiction, together with the nature of the offense.

A prisoner, at the expiration of his sentence at a narcotic farm, may be considered for continued treatment therein as an "ex-prisoner" on submitting application to the Surgeon General on a form prescribed therefor. Such application must contain an agreement to submit to custodial care and treatment for the maximum time estimated by the Surgeon General as necessary to effect a cure or until he ceases to be an addict and be accompanied by a certificate from the medical officer in charge stating that at least one month prior to the expiration of sentence the prisoner has been examined, that he is still an addict, that he may by further treatment in a narcotic farm be cured of his addiction, and estimating the maximum time necessary to accomplish such cure. No prisoner shall be continued for treatment beyond the expiration of his sentence except on receipt of the Surgeon General's written approval of the application, and then only for such period of time as has been estimated as necessary to accomplish a cure.

A probationer shall be admitted to a narcotic farm for treatment on presentation to the medical officer in charge of an authenticated copy of the order entered by any court of the United States or other federal authority having power to suspend the imposition or execution of sentence and place a defendant on probation under any existing law, showing that such convicted person has been placed on probation and that the court or other federal authority has imposed as one of the conditions of such probation that such person shall be admitted and submit himself for treatment at a narcotic farm until discharged therefrom as cured of his addiction; such document shall be supplemented by a certificate executed after conviction by the prosecuting officer or probation officer on a form prescribed by the Surgeon General, such certificate stating the respective officer's belief that the convicted person is an addict, his reasons for such belief and all pertinent facts bearing on such addiction, together with the nature of the offense.

Any addict, except one who is an unconvicted alien, may be considered for admission to a narcotic farm for treatment and confinement therein as a voluntary patient on filing application with the Surgeon General on a prescribed form. Such applicant must agree to submit to custodial care and treatment for the maximum time estimated by the Surgeon General as necessary to effect a cure or until he ceases to be an addict. Unless he is a beneficiary of the United States Public Health Service as provided by law and regulation, such applicant must agree, if so required by the Secretary of the Treasury, to reimburse the government for his subsistence, care and treatment and accompany his application by a recognizance, stipulation, bond or undertaking in form and amount to be approved by the Secretary of the Treasury guaranteeing the cost of his subsistence, care and treatment. Such application must be accompanied also by a medical certificate executed on a prescribed form by a qualified physician designated by the Surgeon General. Such certificate must state whether the applicant is an addict, whether the designated physician believes that the applicant may by treatment in a narcotic farm be cured of his addiction, the estimated time necessary to effect a cure, and any further information bearing on the addiction, habits or character of the applicant that may be pertinent. No such addict may be admitted unless the application is approved by the Surgeon General and unless suitable accommodations are available after all eligible addicts convicted of offenses against the United States have been admitted.

The medical officer in charge shall not admit or accept responsibility for any addict applying or presented for admission to a narcotic farm when in doubt as to the eligibility of such addict or as to the sufficiency of the documentary evi-

dence presented to establish eligibility. In such cases he shall report the salient facts together with any recommendations he may desire to make to the Surgeon General for decision. Persons otherwise eligible may be refused admission when accommodations are not available or when appropriations are insufficient for their transportation, maintenance and care.

The actual and necessary expenses incident to the transfer to a narcotic farm of prisoners or probationers, including the actual and necessary round trip expenses of custodial officers required in the transfer of prisoners, shall be chargeable to the appropriation for the maintenance of such farm when authorized by the Surgeon General. No payment shall be made from such appropriation for any of the expenses of transporting to a narcotic farm ex-prisoners or voluntary patients.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Nonunion of Fragments of Fractured Tibia in Rachitic Child.—The plaintiff, when 21 months old, fell out of her high chair one night, fracturing her left tibia. The defendant saw her that night but made no effort to reduce the fracture until the following morning, when the child was taken to a hospital, the fracture reduced and a cast applied. About five weeks later the cast was removed but the child refused to walk and a new cast was applied. For months this process of applying and removing casts continued, the child refusing to walk each time a cast was removed. Finally an operation was performed, the ends of the fragments were scraped and a beef bone peg inserted. This treatment did not produce a union and the beef bone peg slipped down into the medullary canal of the lower portion of the bone. The defendant again operated, removed the peg, rescraped the ends of the fragments and sutured them together. This did not produce a union. The child was then taken by her parents to a clinic, where a homogenous graft was attempted but without success. A suit for malpractice was then instituted in the child's behalf by her father against the defendant. Judgment was rendered for the plaintiff, and the defendant appealed to the Supreme Court of Oklahoma, contending mainly that there was a total absence of competent medical testimony to show that the failure of the child's leg to heal was due to a lack of care or skill in his diagnosis and treatment.

There was evidence that the child had rickets, to which fact the defendant attributed the failure of his efforts to obtain a union of the fragments. The defendant was supported in the correctness of his diagnosis, in the propriety of the treatment he rendered and in his contention that the permanent nonunion resulted from the congenital condition of the bones and the presence of rickets by the positive testimony of ten other physicians. The only medical testimony apparently presented in behalf of the child was the deposition of two physicians, based on an examination not of the child but of roentgenograms taken of the fracture. The defendant contended that the testimony of these physicians did not conflict with the testimony of his expert witnesses. The court, however, pointed out that the plaintiff's witnesses criticized the defendant for not reducing the fracture immediately on the night of the injury, for not having roentgenograms taken with more frequency, whereby he might have studied the alignment, the apposition, the formation of callus, and other details of healing, and for failure to have an analysis of the blood made by which constitutional deficiencies might have been determined accurately and treated. They criticized, too, the cast applied and they condemned the insertion of the peg in view of its size, saying that it was bound to act as a foreign body and to irritate and to interfere with the functions of the medullary canal. They denied that the roentgenograms indicated any constitutional causes for the failure of the fragments to unite and contended that there was evidence of vitality in the bones at all times. One of them on cross examination stated that a roentgenogram indicated that nonunion was due to lack of apposition

and to irritation by a foreign body and to irritation caused by the ends of the fragments rubbing, as the result of the lack of fixation and apposition.

The Supreme Court was of the opinion that the plaintiff's testimony was of sufficient probative value to support a finding that the defendant did not diagnose and treat the child in keeping with the medical standards of the community and that the failure to obtain a union of the fractured bone was the result thereof rather than of any deficiency in the child's physical self. The judgment in favor of the child was accordingly affirmed. Two justices of the court filed a dissenting opinion.—*White v. Burton (Okla.)*, 71 P. (2d) 694.

Zoning Ordinances: Practice of Medicine Not a Trade or Industry.—A licensed physician was arrested pursuant to an affidavit which charged that on a stated day and at a certain address he violated the zoning ordinance of the city of Miami Beach, Fla., by "operating the profession of physician." He petitioned for and procured a writ of habeas corpus and was discharged from custody. The defendant in the habeas corpus proceeding, the chief of police of the city of Miami Beach, then appealed to the Supreme Court of Florida.

The zoning ordinance in question, said the Supreme Court, was entitled "An Ordinance to Regulate and restrict the Erection, Reconstruction, Alteration, Location and Use of Buildings, structures, land and water, for trade, industry, residence or other purposes." Section 2 of the ordinance, in dividing the city into certain area districts and restricting the use of land in some of these districts, provided:

In order to regulate and restrict the location of trades and industries and the location of buildings erected, constructed, reconstructed or structurally altered for specific uses, and to regulate the size of buildings and other structures hereafter erected or altered, to regulate and determine the size and dimensions of yards, courts and other open spaces and to regulate and limit the percentage of lot that may be occupied and the density of population, the City of Miami Beach Florida is hereby divided into use and area districts as follows.

The affidavit under which the physician was arrested charged that he violated the ordinance by "operating the profession of physician" at a stated address. But, said the court, engaging in the practice of medicine or, as was charged in the affidavit, "operating the profession of physician," is neither conducting a trade nor engaging in an industry. The ordinance, therefore, does not apply to the practice of medicine. If the affidavit should be held to charge an offense under the ordinance, then every physician who visited a patient outside the business district of and within the city of Miami Beach would necessarily be deemed to be doing so in violation of the ordinance.

The court accordingly affirmed the order of the lower court discharging the physician from custody.—*Yocum, Chief of Police, v. Feld (Fla.)*, 176 So. 753.

Privileged Communications: When Patient Waives Privilege by Testifying.—The plaintiff suffered certain injuries which he attributed to the negligence of the defendant. During the course of a suit for damages that ensued, the defendant sought to introduce the testimony of a physician who had treated the plaintiff prior to the accident. The trial court excluded this testimony, the intermediate appellate court reversed that ruling, and the plaintiff appealed to the Supreme Court of Ohio.

In Ohio a physician generally may not testify "concerning a communication made to him by his patient in that relation, or his advice to his patient." Such testimony is admissible by express consent of the patient or if the patient "voluntarily testifies, the . . . physician may be compelled to testify on the same subject." In the present case there was no claim that express consent was given by the plaintiff for the physician to testify. The plaintiff did testify in his own behalf. On direct examination he made no reference to the physician but did state that he had been in good health prior to the accident. On cross examination he admitted that he had consulted the physician but did not testify as to the ailment for which the physician treated him. But, said the court, this testimony on cross examination was not "voluntary" within the meaning of the statute. The plaintiff was obliged to answer the questions

whether he desired to or not. He had no choice about the matter and by so testifying he did not waive the privilege.

The defendant further contended that, when the plaintiff in his direct examination, which was voluntary, testified that his health before the time of the accident was good, he therefore testified on a "subject" under the statute in such a manner as to permit the defendant to introduce testimony respecting his health during that period, including the communications, advice and treatment of plaintiff by the physician who was offered as a witness. When the plaintiff so testified, the defendant contended, he thereby "opened the door" and waived the privilege accorded him by the statute. While, said the court, there is much force in such an argument, such an interpretation would render the statute useless and ineffective in every case in which the plaintiff or patient has testified generally respecting his health. One weakness of such an argument, the court pointed out, was illustrated by the manner in which counsel for the defendant in the beginning of his brief stated the question at issue. He said: "The only question in this case for the consideration of the court is: 'If the plaintiff in a personal injury suit voluntarily testifies generally as to his good physical condition at the time of the accident and prior thereto, can he, through his attorney, claim that the testimony of a physician who treated him for an ailment, *not loathsome*, for a period of six months or more before the accident, is privileged, . . .'" (italics supplied by the court). But, the court remarked, the statute makes no such distinction between an ailment which is loathsome and one not so. The statute is not concerned with any particular kind of ailment, whether loathsome or otherwise, but rather with the confidential relationship between physician and patient. What the patient has said to his physician and what the physician has said to the patient is closed to the outside world unless the patient first voluntarily testifies in respect thereto or gives express consent to its revelation.

The judgment of the intermediate appellate court was therefore reversed and that of the trial court affirmed.—*Harpman v. Devine (Ohio)*, 10 N. E. (2d) 776.

Hospitals for Profit: Liability of Owner of Hospital for Negligence of Hospital Nurses.—One of the defendants, a physician, owned and operated a hospital for profit. He assisted at an operation on the plaintiff, in the hospital, by another physician. Alleging that while in the operating room she had been burned by hot water bottles and that her burns had not been properly treated, she sued the physician owner of the hospital and one of the nurses who had helped to care for her, but not the physician who had performed the operation. A general demurrer interposed by the physician defendant was sustained by the trial court, and the plaintiff appealed to the Supreme Court of Idaho.

In her complaint, the plaintiff alleged, among other things, that the nurses applied the hot water bottles without instruction from or knowledge of the operating physician; that at the operation the nurses were not servants or under the control of the operating physician but were under the exclusive control and direction of the defendant physician; and that after her removal from the operation room, although the defendant physician and the nurses knew of the burns, they "did not administer to them in any manner." The demurrer to the complaint was sustained on the theory that the negligence, if any, was the nurses', who, though general servants of the defendant physician, as owner of the hospital, were during the time of the operation as a matter of law loaned to and became the servants of the operating physician. Hence, it was contended, no relationship of master and servant then existed between the defendant physician and the nurses so as to render him liable for their negligence. In the opinion of the Supreme Court, however, the trial court erred in sustaining the demurrer. In the first place, the complaint charged negligence on the part of the defendant physician and the nurses in failing to treat the burns after the patient was taken from the operating room. A hospital conducted for profit is liable for the negligence of its employees in the care rendered a patient subsequent to an operation. In the second place, the complaint alleged specifically that during the operation the nurses were not servants of or under the control of the operating physician but of the defend-

dant physician, and the court knew of no authority for holding that such a relation could not as a special circumstance legally exist.

The complaint, in the opinion of the court, stated a cause of action against the defendant physician, and the demurrer should have been overruled. The trial court, therefore, was directed to overrule the demurrer and to entertain further appropriate proceedings.—*Corcy v. Beck (Idaho)*, 72 P. (2d) 856.

Autopsy: Liability for Unauthorized Autopsy.—A widow, said the Supreme Court of Kansas, is entitled to receive, for the purpose of burial, the body of her husband in the same condition in which the breath of life left it. An autopsy performed on the body without her consent, unless by direction of or by the coroner when death has occurred under circumstances giving him jurisdiction, is a violation of that right for which she may maintain an action for damages against the physician performing it and a person assisting him in so doing. The fact that the unauthorized autopsy caused her mental pain and suffering only but did not cause her any physical injury will not defeat her right to recover damages.—*Alderman v. Ford (Kan.)*, 72 P. (2d) 981.

Society Proceedings

COMING MEETINGS

- American Medical Association, San Francisco, June 13-17. Dr. Olin Weir, 535 North Dearborn St., Chicago, Secretary.
- American Academy of Pediatrics, Del Monte, Calif., June 9-11. Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill., Secretary.
- American Academy of Tuberculosis Physicians, San Francisco, June 17-18. Dr. Arnold Minnig, 638 Metropolitan Bldg., Denver, Secretary.
- American Association of Industrial Physicians and Surgeons, Chicago, June 6-9. Dr. Volney S. Cheney, Armour and Company, Union Stock Yards, Chicago, Secretary.
- American Association of Medical Milk Commissions, San Francisco, June 13-14. Dr. Paul B. Cassidy, 2037 Pine St., Philadelphia, Secretary.
- American Dermatological Association, Del Monte, Calif., June 9-11. Dr. Fred D. Weidman, 36 Hamilton Walk, Philadelphia, Secretary.
- American Gynecological Society, Asheville, N. C., May 30-June 1. Dr. Richard W. Telinde, 11 East Chase St., Baltimore, Secretary.
- American Heart Association, San Francisco, June 10-11. Dr. Howard B. Sprague, 50 West 50th St., New York, Secretary.
- American Medical Women's Association, San Francisco, June 12-14. Dr. Helen A. Cary, 1634 N.E. Halsey St., Portland, Ore., Secretary.
- American Ophthalmological Society, San Francisco, June 9-11. Dr. Eugene M. Blake, 303 Whitney Ave., New Haven, Conn., Secretary.
- American Pediatric Society, Bolton Landing, N. Y., June 9-11. Dr. Hugh McCulloch, 325 North Euclid Ave., St. Louis, Secretary.
- American Protologic Society, San Francisco, June 11-13. Dr. Curtie Rosser, 710 Medical Arts Bldg., Dallas, Texas, Secretary.
- American Psychiatric Association, San Francisco, June 6-10. Dr. W. C. Sandy, State Education Bldg., Harrisburg, Pa., Secretary.
- American Radium Society, San Francisco, June 13-14. Dr. F. W. O'Brien, 465 Beacon St., Boston, Secretary.
- American Rheumatism Association, San Francisco, June 13. Dr. Lorine T. Swaim, 372 Marlborough St., Boston, Secretary.
- American Society of Clinical Pathologists, San Francisco, June 9-11. Dr. A. S. Giordano, 531 North Main St., South Bend, Ind., Secretary.
- American Urological Association, Quebec, Canada, June 27-30. Dr. Clyde L. Deming, 789 Howard Ave., New Haven, Conn., Secretary.
- Association for the Study of Allergy, San Francisco, June 9-10. Dr. J. Harvey Black, 1405 Medical Arts Bldg., Dallas, Texas, Secretary.
- Association for the Study of Internal Secretions, San Francisco, June 13-14. Dr. E. Kost Shelton, 921 Westwood Blvd., Los Angeles, Secretary.
- Connecticut State Medical Society, Groton, June 1-2. Dr. Creighton Barker, 258 Church St., New Haven, Secretary.
- Hawaii Territorial Medical Association, Honolulu, May 20-22. Dr. Douglas B. Bell, Dillingham Bldg., Honolulu, Secretary.
- Maine Medical Association, Bar Harbor, June 26-28. Dr. F. R. Carter, 22 Arsenal St., Portland, Secretary.
- Massachusetts Medical Society, Boston, May 31-June 2. Dr. Alexander S. Begg, 8 The Fenway, Boston, Secretary.
- Medical Library Association, Boston, June 28-30. Miss Janet Doe, 2 East 103d St., New York, Secretary.
- Minnesota State Medical Association, Duluth, June 29-July 1. Dr. E. A. Meyerding, 11 West Summit Ave., St. Paul, Secretary.
- National Tuberculosis Association, Los Angeles, June 20-23. Dr. Charles J. Hatfield, 7th and Lombard Sts., Philadelphia, Secretary.
- New Mexico Medical Society, Santa Fe, June 6-8. Dr. L. B. Cohenour, 219 West Central Ave., Albuquerque, Secretary.
- Rhode Island Medical Society, Providence, June 1-2. Dr. Guy W. Wells, 124 Waterman St., Providence, Secretary.
- Society of Surgeons of New Jersey, Hackensack, May 25. Dr. Walter E. Mount, 21 Plymouth St., Montclair, Secretary.
- West Virginia State Medical Association, White Sulphur Springs, July 11-13. Mr. Joe W. Savage, Public Library Building, Charleston, Executive Secretary.
- Western Branch of American Public Health Association, Portland, Ore., June 6-8. Dr. William P. Shepard, 699 Stockton St., San Francisco, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1927 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them. Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

55: 455-666 (March) 1938

- Basal Metabolism Standards for Children. F. B. Talbot, Boston.—p. 455.
- *Retardation of Growth in Diabetic Children. J. D. Boyd and A. H. Kantrow, Iowa City.—p. 460.
- Bacteriology of Blood in Rheumatic Fever. C. J. Leslie and Martha J. Spence, New York.—p. 472.
- Diet in Treatment of Diabetes Mellitus in Children. W. E. Nelson and Dorothy Ward, Cincinnati.—p. 487.
- Acute Encephalomyelitis Following German Measles. C. Davison and L. Friedfeld, New York.—p. 496.
- Acute Appendicitis in Children. W. J. Potts, Oak Park, Ill.—p. 511.
- Acute Cholecystitis Complicating Scarlet Fever: Report of Two Cases and Review of Literature. Ann T. Swing and J. G. M. Bullowa, New York.—p. 521.
- Use of Percombor Liver Oil as an Antirachitic Agent. R. L. Roddy, Elizabeth Kirk Rose, P. J. Hodes and J. C. Gittings, Philadelphia.—p. 526.
- Relation of Creatinine-Height Coefficient to Various Indexes of Nutrition. Amy L. Daniels, Mary K. Hutton and Bernice Neil, Iowa City.—p. 532.
- Vitamin B₁ Intake of Nursery School Children. Elda Robb, Ella M. Vahlteich and Mary S. Rose, New York.—p. 544.
- Hospital Infections: I. Survey of the Problem. C. F. McKhanna, Boston; A. Steeger, Santiago, Chile, and A. P. Long, Boston.—p. 579.

Retardation of Growth in Diabetic Children.—Boyd and Kantrow present data on 167 children with diabetes mellitus observed at the department of pediatrics prior to January 1935; physical retardation was noted in 6 per cent of the group (ten children), whose stature or rate of growth over long periods was markedly lower than the standard values used for comparison. The norms chosen as standards were those compiled by the Iowa Child Welfare Research Station. They find that, if diabetes mellitus in children is suitably controlled through adequate diet and through avoidance of frequent or continuous glycosuria, retardation of growth will be prevented or corrected. Physical retardation should be considered a result of nutritional or allied metabolic inadequacies rather than a consequence of endocrine disturbances unless prolonged observance of an ample dietary regimen has failed to maintain a normal rate of growth.

American Journal of Hygiene, Baltimore

27: 221-492 (March) 1938. Partial Index

- Survey of Intestinal Protozoa and Effect of Aldarson on Giardia and Other Intestinal Protozoa of Man. Veronica Armaghian and G. C. Medary.—p. 250.
- Incidence and Distribution of Ascaris Lumbricoides, Trichocephalus Trichiura, Hymenolepis Nana, Enterobius Vermicularis and Hymenolepis Diminuta in Seventy Counties in North Carolina. A. E. Keller, W. S. Leathers and J. C. Knox, Nashville, Tenn.—p. 258.
- Cattle as Reservoir Hosts of Schistosoma Japonicum in China. K. Wu, Shanghai, China.—p. 290.
- Test of Theory on Origin of Bacteriophage. R. W. Glaser, Princeton, N. J.—p. 311.
- Blood Platelets in Hookworm Anemia. J. W. Landsberg, Baltimore.—p. 316.
- Mosquito Transmission of Avian Malaria Parasites (Plasmodium Circumflexum and Plasmodium Cathemerium). C. M. Herman, Baltimore.—p. 345.
- Transitory Immunity to Yellow Fever in Offspring of Immune Human and Monkey Mothers. F. L. Soper, Rio de Janeiro, Brazil, South America; H. Beeuwkes, Stamford, Conn.; N. C. Davis, and J. A. Kerr, Rio de Janeiro, Brazil, South America.—p. 351.
- Further Studies on Intestinal Emphysema of Swine. D. F. Eveleth and H. E. Biester, Ames, Iowa.—p. 364.
- Complete, Revised Technic of Actinic Sunshine Analysis, with Modifications for Freezing Weather and Near Meridian Exposures. F. O. Tonney, Chicago, and P. P. Somers.—p. 370.
- Study of Therapeutics and Prophylaxis of Malaria by Synthetic Drugs as Compared with Quinine. Malaria Commission of the League of Nations Health Organization.—p. 390.
- Culex of Siam with Descriptions of New Species. O. R. Causey, Baltimore.—p. 399.
- Forced Calcification with Parathormone in Experimental Trichina (Trichinella Spiralis) Infections. T. v. Brand, G. F. Otto and Evelyn Abrams, Baltimore.—p. 461.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

39: 321-496 (March) 1938

- *Roentgen Visualization and Diagnosis of Breast Lesions by Means of Contrast Mediums. N. F. Hicken, R. R. Best, H. B. Hunt and T. T. Harris, Omaha.—p. 321.
- Plasma Cell Myeloma: Report of Two Cases with Unusual Survivals of Six and Ten Years. R. E. Gross and W. W. Vaughan, Boston.—p. 344.
- Roentgen Studies of Pathologic Physiology of Bronchial Asthma. L. G. Rigler and R. Koucky, Minneapolis.—p. 353.
- Expiratory Roentgenograms for Pulmonary Apical Detail. D. Salkin, Hopemont, W. Va.—p. 363.
- Roentgenoscopic Localization of Tuberculous Lesions of Lung for Best Roentgenographic Reproduction. H. H. Cherry, Paterson, N. J.—p. 368.
- Magnesium Tetraiodophenolphthalein in Oral Cholecystography. T. O. Meneses and H. C. Robinson, Grand Rapids, Mich.—p. 373.
- Calculi in Seminal Vesicles: Report of Case. N. J. Heckel, Chicago.—p. 377.
- Rhythmic Cyclic Alternating Activity of Kidneys and Rhythm of Other Organs in General. M. J. S. Pillai, Madras, India.—p. 379.
- Radiologic Education in England. A. E. Barclay, Oxford, England.—p. 381.
- *Pleuropulmonitis Following Irradiation. I. I. Kaplan and Dorothy Bell, New York.—p. 387.
- *Radiation Treatment of Herpes Simplex. W. C. Hall, Philadelphia.—p. 393.
- Some Observations on Carcinoma of the Breast. E. P. Pendergrass and P. J. Hodes, Philadelphia.—p. 397.
- Surgery and Irradiation in Treatment of Cancer of the Breast. J. G. Spackman and J. F. Hynes, Wilmington, Del.—p. 407.
- Rationale of Artificial Menopause in Carcinoma of the Breast. G. W. Taylor, Boston.—p. 419.
- Radiation Treatment of Carcinoma of Lung. I. Levin, New York.—p. 427.
- Depth Effects in Roentgenograms. A. B. Meservey, Hanover, N. H.—p. 439.
- Enteric Coatings: Clinical Investigations. A. W. Crane and M. Wruble, Kalamazoo, Mich.—p. 450.

Roentgen Visualization of Breast Lesions.—In diagnosing the types of mammary neoplasms roentgenologically, Hicken and his colleagues use one of two methods. The first is to inject the milk ducts with some radiopaque substance (stabilized thorium dioxide sol) and then make stereoscopic studies. The resulting "mammograms" present accurate anatomic patterns of the injected ducts. Any pathologic condition which alters their size, shape or conformation is readily detected. In the second procedure, termed "aeromammography," carbon dioxide is injected into the retromammary and premammary spaces in such a manner that the diffusing gas forms a contrast capsule around the parenchymal tissue and reveals any neoplasms that may be present. Contrast mammographic studies should be used when the simple roentgenograms are not informative, as they graphically portray the refined differentiation of anatomic relations and pathologic processes. Mammography encourages a patient to seek advice, for tumors can be correctly diagnosed without operation. Unnecessary mastectomies are avoided and mutilating radical procedures are not employed in hopeless cases. Complications are rare. During the last twenty-six months the authors have performed a total of 625 mammograms on virginal, lactating, involuting and diseased mammary glands. Within the early period of this study, three breast abscesses developed following the use of colloidal thorium dioxide. In two other instances the ducts were submitted to too much pressure and the smaller lacteals ruptured, permitting the compound to seep into the matrix structures, but only a mild nonsuppurative inflammation resulted. Refinement of technic and increased experience have eliminated these difficulties. Acute mastitis contraindicates all forms of visualizing studies as the manipulation activates the infective process. Such neoplasms as lipoma, fibroma, papilloma, cysts, galactoceles and carcinoma have been visualized and diagnosed by the two methods.

Pleuropulmonitis Following Irradiation.—Because of contradictory statements regarding the development of pleuropulmonitis following irradiation, Kaplan and Bell undertook a special study of the effects of intensive irradiation in seven selected cases treated over a period of from two months to two years. Roentgenograms in these cases were studied before, during and after treatment. Direct irradiation through the lung in the treatment of cancer of the breast is not advisable. That is why their method of roentgen therapy is limited to the tangential technic. All the patients were women with definite malignant lesions of the breast. High voltage roentgen therapy was employed exclusively, with additional irradiation in two cases by either the large radium pack or interstitial implantation

of radium needles. From their study they conclude that pleuropulmonitis, as described by others, occurs when cancer of the breast is treated by intensive irradiation with the rays passing through the lungs and may well be due to the technic employed or to a concomitant infection. Perhaps the explanation for postirradiation fibrosis in this anatomic site is identical with that in other sites. The pelvis, abdominal cavity or any parenchymal organ may be irradiated with no alteration in the absence of pathologic manifestations, but, when a concomitant infection is present, fibrosis ensues. Following the use of direct intensive irradiation of the breast, no pleuropulmonitis has occurred in any of the cases treated by the authors. In the treatment of the seven specifically selected cases they utilized varying factors of intensity and quality of radiation and direction of the radiation. With high voltage roentgen rays the depth dose is great, but the direction of the ray is tangential and perhaps that factor obviates pathologic changes in the tissue of the lungs. With the 5 Gm. radium bomb the depth dose is smaller, but because of the size of the field the beam is always directed into the lung. The intensities vary with x-rays and radium. Intensive irradiation when directed tangentially to the wall of the chest for carcinoma of the breast does not damage normal lung tissue.

Radiation Treatment of Herpes Simplex.—Hall treated fifteen patients for herpes simplex by irradiation. All the patients treated had herpes labialis. Several of them had more than one lesion at various times. In one patient the herpetic lesions appeared each month with menstruation, but in most of them no obvious cause for the eruptions could be found. The treatment factors used have been 130 kilovolts, 5 milliamperes, tube target distance 30 cm., without filtration. In more than half of the cases 375 roentgens with these factors has been administered in a single dose. This produced definite improvement. In several cases as little as 125 roentgens was used, but the results tended to show that most often this dose was too small. A liberal amount of normal skin was included on all sides of the area treated. The earlier the lesion is treated the better the result. Even in lesions forty-eight hours old the treatments tended to hasten the drying up of vesicles and to shorten the course of the affliction. In early cases it was not unusual for the tingling sensation to disappear within three hours and for the inflammatory reaction to be gone within from six to eight hours.

American Journal of Surgery, New York

40: 1-320 (April) 1938. Partial Index

- Nutritional Disturbances Associated with Diseases of Stomach and Duodenum. W. G. Maddock, Ann Arbor, Mich.—p. 12.
Total Gastrectomy for Carcinoma of Stomach. A. W. Allen, Boston.—p. 35.
Malignancy in Chronic Gastric Ulcer. W. J. M. Scott and G. B. Mider, Rochester, N. Y.—p. 42.
Surgical Management of Bleeding Peptic Ulcer. D. B. Pfeiffer and A. G. Martin, Philadelphia.—p. 55.
*Gastrojejunalic Fistula. C. S. Rife, Ann Arbor, Mich.—p. 73.
Primary Carcinoma of Duodenum: Report of Eleven Cases. C. I. Allen, Detroit.—p. 89.
Indications for and End Results of Surgery in Treatment of Duodenal Ulcer. G. Crile and G. Crile Jr., Cleveland.—p. 123.
Diverticula of the Proximal Intestine: Duodenum and Jejunum. D. Guthrie and M. J. Brown, Sayre, Pa.—p. 128.
Chronic Obstruction and Dilatation of Duodenum. J. L. McGehee, Memphis, Tenn.—p. 140.
Practical Value of Cholecystography in Surgery of the Gallbladder. F. J. Hodges, Ann Arbor, Mich.—p. 146.
Consideration of Faint Gallbladder Shadows in Intravenous Cholecystography. W. G. Scott and S. Moore, St. Louis.—p. 157.
Formation of Gallstones. J. E. Sweet, New York.—p. 162.
Diagnosis and Treatment of Diseases of Gallbladder and Related Biliary Disorders. F. H. Kruse, San Francisco.—p. 178.
Early Surgical Treatment of Acute Cholecystitis. F. Glenn, New York.—p. 186.
Treatment of Acute Cholecystitis. M. K. Smith, New York.—p. 192.
*Acute Gangrenous Cholecystitis and Use of Partial Cholecystectomy in Its Treatment. W. L. Estes Jr., Bethlehem, Pa.—p. 197.
Critical Evaluation of Cholangiography. C. G. Mixer and L. Herman, Boston.—p. 223.
Acute Pancreatitis, with Especial Reference to Pathogenesis and Diagnostic Value of Blood Amylase Test. W. H. Cole, Chicago.—p. 245.
Surgical Treatment of Carcinoma of Ampullary Region and Head of the Pancreas. A. O. Whipple, New York.—p. 260.
Carcinoma of Pancreas and Extrahepatic Bile Ducts. H. K. Ransom, Ann Arbor, Mich.—p. 264.

Gastrojejunalic Fistula.—Rife states that fourteen cases of gastrojejunalic fistula have been seen at the University Hospital in ten years. Thirteen cases were the result of posterior gastroenterostomy done for duodenal ulcer. One was

due to erosion by carcinoma of the stomach which involved a large segment of the transverse colon. The average age of the patients was 46 years. The interval between gastroenterostomy and definite symptoms of fistula varied from six months to eleven years, with an average interval of about four and one-half years. Operation was performed in ten of the thirteen cases resulting from ulcer, and two of the patients died. One patient died from peritonitis on the fourteenth day after excision of the fistula, closure of the colon and resection of the lower half of the stomach and a segment of the jejunum at the site of the fistula. The other death resulted from an abscess of the lung eighteen days after closure of the fistula and Finney pyloroplasty. Of the eight patients who survived operation, one died of acute lymphatic leukemia four and a half years after operation but had had no symptoms of recurrence prior to death. Two patients showed symptoms of reactivated duodenal ulcer, one four months and one six years after operation. In one case, in which a new anastomosis had been made, a new jejunal ulcer developed 3½ inches distal to the stoma; this was treated by resection of the jejunum, leaving the patient practically asymptomatic three years later. Of the three patients not operated on, one because of his age and absence of distressing symptoms was treated conservatively. He lived about four years after symptoms of fistula developed. Two patients refused operation. One died three weeks after leaving the hospital; the other has not been heard from since. The excision or the simple closure of the fistula, undoing of the old gastroenterostomy and reconstruction of the gastrointestinal tract to its normal state constitute the operation that has been used to the best advantage in the majority of the cases. In all cases in which operation is planned, a careful preoperative regimen designed to restore the body chemistry to as near normal as possible is imperative.

Gangrenous Cholecystitis and Partial Cholecystectomy.—Estes classifies seventy-eight consecutive cases of acute cholecystitis, all verified at operation, as five acute nonsuppurative, thirty-nine acute suppurative without demonstrable gangrene and thirty-four gangrenous. Of the gangrenous group, twenty-four showed stones impacted in the cystic duct and ten gave a positive culture from the gallbladder bile of either the colon bacillus (nine) or Staphylococcus albus (one). There were nine cases of perforation, seven with localized pericholecystic abscesses and two with acute general peritonitis. The only indication for immediate or emergency operation is the presence of symptoms of perforation with a spreading peritonitis. If gangrene is suspected, early operation must be definitely considered. Evidence of spreading or increasing suppuration or failure of some amelioration of the symptoms is an indication for prompt surgical intervention. The gallbladder should be removed whenever possible. Cholecystectomy from above downward will be found to be technically easier in these hugely distended, thick gallbladders. When the inflammation and induration extend to the area of the common duct, a partial cholecystectomy has proved exceedingly valuable. In the bad risk patient, cholecystostomy may be the only operation with a proper factor of safety. In the presence of jaundice and obvious involvement of the common duct, cholecystostomy should be considered the first part of a two-stage procedure, the second being a cholecystectomy with exploration of the common duct.

Anatomical Record, Philadelphia

70: 371-504 (March) 1938

- Golgi Apparatus in Proximal and Distal Tubule Cells of Perfused Frog's Kidney. V. M. Emmel, Providence, R. I.—p. 371.
Age Order of Epiphyseal Union in the Guinea Pig. T. T. Zuck, Columbia.—p. 389.
Hyperplasia and Hypertrophy of Uterine Musculature in Ovariectomized Rats Following Estrone Injections. O. L. Barks and M. D. Overholser, Columbia, Mo.—p. 401.
Review of the Golgi Apparatus. H. Kirkman, Palo Alto, Calif.—p. 413.
Effect of Male Hormone Substances on Birth and Prenatal Development in the Rat. J. B. Hamilton and J. M. Wolfe, Albany, N. Y.—p. 433.
Studies on Cardiac Muscle Cells, from Chick Embryos, Grown in Tissue Culture. G. S. de Rényi and Mary Jane Hogue, Philadelphia.—p. 441.
Topography of Hypophysis in Xenarthra. G. B. Wislocki, Boston.—p. 451.
Cytologic Study of Fatigued Muscle. E. Adelhelm, Denver.—p. 473.
Development of Crypts in the Human Palatine Tonsil. W. L. Minor, Chicago.—p. 483.

Annals of Otol., Rhinol. and Laryngology, St. Louis

47: 1-288 (March) 1938

- Suppuration in Petrous Pyramid. J. R. Lindsay, Chicago.—p. 3.
Width of Basilar Membrane in Man. E. G. Wever, Princeton, N. J.—p. 37.
Deep Infections of Neck. H. B. Orton, Newark, N. J.—p. 48.
Ménière's Disease as an Indicator of Disturbances in the Water Metabolism, Capillary Function and Body Condition. S. H. Mygind and Dida Dederding, Copenhagen, Denmark.—p. 55.
Peripheral Endings of Cochlear Nerve. W. P. Covell, San Francisco.—p. 63.
Inner Ear from an Experimental and Clinical Standpoint. W. Hughson, Abington, Pa.—p. 68.
*Lateral Sinus Thrombosis: Study of Eighty-Eight Cases, with Ten of Venous Thrombosis, Found at 12,500 Consecutive Necropsies. C. W. Irish, Los Angeles.—p. 78.
The Management and Treatment of Otogenic Meningitis. S. J. Kopetzky, New York.—p. 117.
Review of 303 Cases of Cholesteatoma. E. M. Holmes, Boston.—p. 135.
Problems in Diagnosis and Treatment of Hyperplastic Sinusitis and Allergy. E. R. Faulkner, New York.—p. 144.
A Masker for Bone Conduction Tests. J. H. Hulka, Long Island City, N. Y.—p. 153.
Experiments on Conduction of Sound in the Ear. H. G. Kobrak, Chicago.—p. 166.
Clinical Availability of Ostium Maxillare: Clinical and Cadaver Study. H. C. Rosenberger, Cleveland.—p. 176.
Contour Reconstruction After External Frontal Sinus Operation. G. B. O'Connor, San Francisco.—p. 183.
Otomycosis: Some Remarks Concerning Its Prevalence, Symptomatology and Treatment. W. D. Gill, San Antonio, Texas.—p. 189.
Comparative Anatomy of the Tongue. G. McGregor, Toronto.—p. 196.
Is the Hearing Aid the Problem of the Otologist or the Layman? M. S. Ernsner, Philadelphia.—p. 212.
*Blood Cell Response to Sulfanilamide Therapy. J. A. Bigler, Chicago.—p. 219.
New Operation for Correction of External Deviations of Lower End of the Nose. J. A. Tamerin, New York.—p. 235.
Roentgenogram as an Aid in Diagnosis of Surgical Mastoiditis: Comparison of Operative and Roentgen Findings in 100 Cases of Mastoiditis. D. H. Brownell and I. J. Hauser, Ann Arbor, Mich.—p. 240.

Lateral Sinus Thrombosis.—Irish reports on a study of 1,000 cases of cerebral vascular lesions found in 12,500 consecutive necropsies done at Los Angeles General Hospital. Of this number 133 were found to harbor cerebral embolic lesions, 418 hemorrhagic processes and 449 thrombotic pathologic conditions, among which ninety-eight (9.8 per cent) were sinus and venous thromboses. These ninety-eight cases of cerebral venous system involvement have been reviewed with an exposition of the comparative incidence of the various types of lesions, of the contributory factors and etiologic sources in their production and of the sex, age and survival periods in the patients demonstrating these intracranial pathologic changes. Lateral sinus thrombus was found present in thirty-eight cases, the sinus on the left being involved in twenty-five, on the right side in ten and bilaterally in three. The longitudinal sinus was involved in sixteen cases and the cavernous and its accessory sinuses in thirty-four; venous thromboses were disclosed in ten. The history of the development of knowledge regarding these conditions is reviewed with particular attention to diagnostic procedures, the sources and pathways of infection and the opinions regarding the surgical treatment. Bacteriologically the streptococcus is the causative agent of sinus thrombosis in 60 per cent of the cases, according to Seydell. Streptococcus mucosus is especially virulent and characterized by late exacerbations with fatal outcome. In chronic cases anaerobes and facultative anaerobes may be the causative organisms. In the majority of sinus thromboses the infection is from one organism.

Blood Cell Response to Sulfanilamide Therapy.—To determine the leukocyte response in patients receiving sulfanilamide, Bigler made daily blood counts and Schilling differential counts about the same hour of the day before, during and after sulfanilamide therapy in thirty-three cases. A dose of 15 grains (1 Gm.) of the drug to 20 pounds (9 Kg.) of body weight was closely adhered to. Patients with various types of infections as well as those with no apparent infection were included in the study. Of the thirty-three patients, twenty-seven had a leukocytosis and six had a leukocyte count within normal limits when sulfanilamide therapy was started. Not including the six patients to whom the drug was not administered until the infection subsided, there were twenty-one cases with a leukocytosis. In thirteen of these cases the leukocytes decreased to normal in a crisis-like manner within twenty-

four to thirty-six hours after the subsidence of the fever. In seven cases the white cells returned to a normal level in a lysis-like manner only after forty-eight hours or more, while in one case the leukocytosis did not change. Of the six patients with a normal white cell count to whom the drug was administered, a moderate leukopenia without neutropenia developed in two. In the other four the leukocyte count did not change. The alteration in the leukocyte response was in the nature of a marked absolute reduction of all the cell elements without any characteristic relative change in the proportion of the different white blood cells as studied by the Schilling count. In the majority of cases the Schilling differential count reflected only what one could consider a healing infection. An increase in the leukocyte count attributable to the sulfanilamide did not occur in a single case. In six of seven patients without an infection but with a leukocytosis there was a rapid decrease of the white cells to a normal level when the drug was administered. From this it would seem that the beneficial action of sulfanilamide is due to its own action in the blood stream rather than to its enhancing the power of the leukocytes or increasing their number to control the infection.

Archives of Neurology and Psychiatry, Chicago

39: 655-884 (April) 1938

- Periarthritis Nodosa: Clinicopathologic Study with Special Reference to Nervous System. J. W. Kernohan and H. W. Woltman, Rochester, Minn.—p. 655.
Nucleus Lateralis Medullae: Experimental Study of Its Anatomic Connections in Macacus Rhesus. G. A. Blakeslee, I. S. Freiman and S. E. Barrera, New York.—p. 687.
Experiences with Insulin Shock Therapy in Schizophrenia. H. H. Reese, Madison, Wis., and A. Vander Veer, Chicago.—p. 702.
*Metrazol Shock Treatment of "Functional" Psychoses. A. A. Low, I. R. Sonnenhal, M. F. Blaurock, M. Kaplan and Irene Sherman, with technical assistance of Frances C. Whitcomb, Chicago.—p. 717.
*Mechanism of Migraine Headache and Action of Ergotamine Tartrate. J. R. Graham and H. G. Wolff, New York.—p. 737.
Restlessness in Children. P. M. Levin, Dallas, Texas.—p. 764.
Bad Taste (Cacogeusia). H. H. Hart, New York.—p. 771.
Human Autonomic Pharmacology: XI. Effect of Benzedrine Sulfate on Argyll Robertson Pupil. A. Myerson and W. Thau, Boston.—p. 780.
Autonomic and Motor Localization in Hypothalamus. L. Ectors, N. L. Brokens and R. W. Gerard, Chicago.—p. 789.
Experimental "Encephalitis" Produced by Intravenous Injection of Various Coagulants. P. F. A. Hoefer, T. J. Putnam and Mildred G. Gray, Boston.—p. 799.
Subarachnoid Hemorrhage During Shock Therapy for Schizophrenia. H. Freed and C. W. Wofford, Philadelphia.—p. 813.

Metrazol Shock Treatment of "Functional" Psychoses.

—Low and his associates discuss the sixty-six patients with functional psychoses whose treatment with metrazol was terminated by the middle of September 1937. Patients with psychoses associated with "organic" disease were excluded. To thirty of the sixty-six patients metrazol was given first, administration of metrazol to nine patients was preceded by a course of insulin shocks, in eleven by narcosis, in nine by fever and in seven by fever and narcosis. Metrazol is administered by the intravenous route in a 10 per cent solution. As a first dose 4 cc. of the 10 per cent solution to women and 5 cc. to men is given without regard to body weight. It is important to administer the drug with the greatest possible speed, and the use of a 20 gage needle is advisable. Most patients acquire a tolerance which necessitates a progressive increase in the dose. The treatment gave a relatively high rate of recovery for persons with manic-depressive conditions and those "without psychosis." For the schizophrenic group, treatment yielded a relatively high rate of recovery only if given within six months after onset of the disease. For manic-depressive conditions the superiority of the metrazol treatment to that with prolonged narcosis appears evident; it has increased the rate of remission and reduced the incidence of dangers and complications. The claim advanced by some authors that the outlook for recovery is proportional to the "convulsive threshold" of the patient is not substantiated by the present investigation. Contrary to the assertion of some investigators, the metrazol paroxysm differs in several respects from the "grand mal" attack of cryptogenic epilepsy.

Mechanism of Migraine Headache.—Graham and Wolff found that changes in the intensity of migraine headache are related to changes in amplitude of pulsations of branches of the external carotid arteries. Factors that decreased the

amplitude of the pulsations decreased the intensity of the headache and vice versa. Reduction in the amplitude of pulsations of the temporal artery by manual pressure on the common carotid artery of the affected side was accompanied by reduction in the intensity of the headache. Distention of the temporal artery by increasing experimentally the intramural hydrostatic pressure resulted in pain. Ergotamine tartrate, in diminishing the intensity of migraine headache, reduced the amplitude of pulsations of the aforementioned arteries by about 50 per cent. Observations and photographs made before and during the action of ergotamine during thirty-two attacks of migraine in sixteen subjects revealed vasoconstriction of the temporal and middle meningeal arteries. These data support the postulate that the head pain of migraine is produced by distention of the cranial arteries and that termination of the headache by ergotamine tartrate is due to its capacity to constrict these cranial arteries and thus reduce the amplitude of their pulsations.

Archives of Surgery, Chicago

36: 561-722 (April) 1938

- Acute Iliac Adenitis: Report of Eighteen Cases. F. G. Irwin, San Juan, Puerto Rico.—p. 561.
 Nonspecific Mesenteric Adenitis: Report of 140 Cases. W. Klein, New York.—p. 571.
 Distribution and Excretion of Water and Chlorides After Massive Saline Infusions: Experimental Study. R. A. Cutting, A. M. Lands and P. S. Larson, Washington, D. C.—p. 586.
 Fat Embolism: Résumé of Literature Plus Some Newer Thoughts on Diagnosis. C. S. Scuderi, Chicago.—p. 614.
 Normal Anatomy and Variations of Peripheral Nerves of Leg and Foot: Application in Operations for Vascular Diseases: Study of 100 Specimens. M. T. Horwitz, Philadelphia.—p. 626.
 Calcification and Ossification in Tuberculoma of the Brain: Review of Literature and Report of Three Cases. H. S. Evans, Columbus, Ohio, and C. B. Courville, Los Angeles.—p. 637.
 *Calcification About Flexor Carpi Ulnaris Tendon. H. Milch and H. H. Green, New York.—p. 660.
 Changes in the Mammary Gland of Rat Produced by Various Glandular Preparations. E. B. Astwood, Boston, and C. F. Geschickter, Baltimore.—p. 672.
 Inguinal Hernioplasty with Fascia Transplant. B. L. Fleming, Philadelphia.—p. 698.
 Sixty-Fifth Report of Progress in Orthopedic Surgery. J. G. Kuhns, S. M. Roberts, R. J. Joplin, W. Elliston and F. Ilfeld, Boston; J. A. Freiberg, Cincinnati; J. E. Milgram, New York, and R. I. Stirling, Edinburgh, Scotland.—p. 705.

Calcification About the Flexor Carpi Ulnaris Tendon.

—Milch and Green encountered patients who presented sharply localized pain and tenderness over the area around the pisiform bone, a pathognomonic limitation of motion at the wrist, occasional signs suggesting an inflammatory reaction, a characteristic roentgenogram showing calcification and early subsidence of symptoms. Though all the cases showed a similarity, there seemed to be sufficient variation to justify subdivision into three main types: (1) a hyperacute form, (2) an acute form with calcification and (3) an acute form without calcification. In the absence of any pathologic specimen they have inferred the location of the calcium deposit. No definite etiologic factor can be established. Case 1 suggests an infectious origin. On the other hand, in the case reported by Cohen and in cases 3 and 5 the symptoms are so definite that the relation of trauma or overuse cannot be denied. In the other cases such a definite traumatic etiology could not be established, though it seems to be of more than casual significance that the prominence of the pisiform bone, into which the flexor carpi ulnaris tendon is inserted, is the area that is normally brought into contact with the desk or table top. Because of the abrupt mode of onset of the symptoms and their rapid subsidence under treatment, a traumatic origin seems likely, but an underlying focus of infection, a rheumatic diathesis or a metabolic disturbance cannot be categorically excluded. Apart from the tenderness, swelling and limitation of motion, the characteristic feature is the appearance of the radiopaque substance situated near the pisiform bone. The calcific shadow may appear as a delicate lacework or in more solid masses. It may be circular, oval or elongated. In all probability the size and shape of the shadow depend on the stage of the process and the intensity of the reaction. The condition must be differentiated from a stenosing tendovaginitis or an acute infectious process and roentgenographically from osteomyelitis or periostitis of the pisiform bone, an accessory carpal ossicle

or an old comminuted fracture of the ulnar styloid. Surgical exploration has not been found justifiable. Usually simple rest on a splint, application of heat and administration of salicylates have resulted in prompt disappearance of the symptoms.

Arkansas Medical Society Journal, Fort Smith

34: 231-258 (April) 1938

- Hypochondriacal States. T. A. Watters, New Orleans.—p. 231.
 Ocular Allergy. R. C. Cook, Little Rock.—p. 236.
 Diarrhea in the Artificially Fed Baby. R. Hood, Russellville.—p. 238.

Canadian Public Health Journal, Toronto

29: 103-152 (March) 1938

- Tuberculosis Control in New Brunswick. A. M. Clarke, Lakeville, N. B.—p. 103.
 Simplicity of Treatment of Syphilis. G. S. Fenton, Ottawa, Ont.—p. 109.
 International Relationships of Department of Pensions and National Health. C. P. Brown, Ottawa, Ont.—p. 116.
 Records in Public Health Nursing. Maude H. Hall, Ottawa, Ont.—p. 122.
 Circumstances of Accidental Death in Canada in 1936. Yvonne Bawdry, Ottawa, Ont.—p. 127.
 Cross Connections in Water Supplies. R. Cyr, Montreal.—p. 131.
 *Agglutination of Salmonella and Dysentery Suspensions by Serums of Normal Persons. J. M. Desranleau, Quebec, Que.; L. P. Lebeau, Montreal, and M. H. McCrady, Quebec, Que.—p. 136.

Agglutination of Salmonella and Dysentery Suspensions by Serums.—Desranleau and his associates examined groups of from 100 to 200 control serums from persons in Montreal and a group of fifty-eight serums from hospital patients, the majority of whom were ill with nonenteric febrile disease, in respect of their ability to agglutinate various salmonella, dysentery and brucella suspensions. The more important features of the results obtained include the following: the usual discrepancy between the *Salmonella typhi* H titers of male and those of female serums; a curious discrepancy between the *Salmonella aertrycke* specific titers of these two groups of serums; the comparatively wide distribution of *Bacillus dysenteriae* Flexner X and Y agglutinins; the similarity between the *Flexner dysenteriae* titers of the male and those of the female serums; the similar incidence of *Flexner dysenteriae* agglutinins in the control serums and in the serums of patients suffering from nonenteric febrile diseases, and the infrequent occurrence of high or moderately high titers of agglutinins for *Brucella abortus*, *Salmonella paratyphi* C sp. and *Bacillus dysenteriae* Sonne in the serums examined. Moderately high titers of agglutinins for *Bacillus dysenteriae* Flexner were encountered in the Montreal serums with a frequency much greater than that reported to have been found in serums from the general population of British Columbia.

Florida Medical Association Journal, Jacksonville

24: 467-518 (March) 1938

- Recent Advances in Diagnosis and Treatment of Bronchial Asthma. J. R. Vallotton, Daytona Beach.—p. 479.
 Routine Study of Fresh, Unstained Vaginal Secretions in Obstetrics and Gynecology. J. R. Perdue, Miami.—p. 482.
 Observation on Studies of Kidney Function. W. W. Kirk, Jacksonville.—p. 485.
 Acute Post-Traumatic Osteoporosis. A. R. Beyer, Tampa.—p. 489.
 *Study of Blood Sedimentation Test in Pulmonary Tuberculosis: Preliminary Report. A. J. Logie, Jacksonville.—p. 491.

Blood Sedimentation in Pulmonary Tuberculosis.—Logie performed 148 sedimentation tests in fifty-three cases of tuberculosis. There were fifteen patients (group A) who over a period of six months showed few if any clinical signs of any active pulmonary lesion, with stationary or regressive x-ray signs, negative sputum or occasional positive results on concentrated examination of the sputum or gastric contents. In this group the male curve falls to 25 mm. within the first fifteen minutes and to 46 mm. in one hour, the female curve to 39 and 64 mm. respectively. Group B (twenty cases) represents the average curves of those cases in which there was slight to moderate activity. For the males the curve falls to 55 mm. in the first fifteen minutes and to 67 mm. in one hour, and for the females to 60 and 69 mm. respectively. Group C represents those cases in which there was moderate to marked activity. The male curve falls to 67 mm. in fifteen minutes and to 76 mm. in one hour, while the respective female curve declines to 68 and 76 mm. These results enable one to classify the tuberculous cases according to activity. Using the Brooks

method, the author considers the first fifteen minutes of the test (induction period) more significant than the type of curve over one hour of observation. As a variable degree of anemia is present in the majority of tuberculous cases and as the sedimentation rate is usually accelerated in anemia, he feels that a single sedimentation rate may establish a faulty criterion unless corrections are made by hematocrit estimations or the average of several rates taken at different intervals. The study corresponds with the reports of other investigators that in pulmonary tuberculosis the sedimentation speed of the blood increases with the activity of the disease. Artificial pneumothorax decreases the sedimentation rate slightly, if not immediately after a refill. The diminished congestion brought about by the procedure is believed to be the underlying cause. After a comparative study of the leukocytic index it was evident that the sedimentation rate gave more reliable information as to the progress of the disease in the patient.

Johns Hopkins Hospital Bulletin, Baltimore

62: 91-158 (Feb.) 1938

- Researches on Tetanus: VI. Production of Reflex Motor Tetanus by Intraspinal Injections of Tetanus Toxin. W. M. Firor and A. F. Jonas Jr., Baltimore.—p. 91.
- Output of Sugar and Potassium by Turtle's Surviving Liver. C. D. Snyder and R. E. Johnson, Baltimore.—p. 110.
- Studies on Experimental Hypophysectomy in Dogs: III. Somatic, Mental and Glandular Effects. W. E. Dandy and F. L. Reichert, Baltimore.—p. 122.

62: 159-234 (March) 1938

- Arteriosclerosis in Childhood: Report of Two Cases. Harriet G. Guild, F. B. Kindell and T. A. Gibson, Baltimore.—p. 159.
- *Clinical Study of Myotonic Dystrophy and Myotonia Congenita, with Especial Reference to Therapeutic Effect of Quinine. L. C. Kolb, A. M. Harvey and M. R. Whitehill, Baltimore.—p. 188.
- Hereditary Malformation of Vertebral Bodies. S. Jarcho and P. M. Levin, Baltimore.—p. 216.
- Slowly Absorbed Epinephrine Preparation: Preliminary Report. E. L. Keeney, Baltimore.—p. 227.

Quinine in Myotonic Dystrophy and Congenital Myotonia.—Kolb and his collaborators describe the effect of quinine, dimethyl carbamic ester of hydroxy phenyl-trimethyl ammonium methyl sulfate, the physostigmine derivative and other drugs in eight cases of atrophic and in one of congenital myotonia. The action of quinine in two cases of myasthenia gravis is discussed. Three daily dynamograph records were made of four patients: during a control period, during a period in which quinine alone was given, when quinine and the physostigmine derivative were administered, and during a control period. These were recorded graphically and the tracings obtained provided an objective estimate of the therapeutic effect and antagonistic action of each drug. Quinine sulfate abolished the myotonus but had no effect on muscular strength. Quinine sulfate counteracted the effect of the physostigmine derivative in two cases of myasthenia gravis and increased the symptoms and signs of the disease. The physostigmine derivative increased myotonus and directly antagonized the full therapeutic effect of quinine sulfate. Parathyroid extract, potassium chloride and adrenal cortex extract failed to reduce myotonus.

Journal of Bacteriology, Baltimore

35: 207-342 (March) 1938

- Characteristics of Antipneumococcus Serums Produced by Various Animal Species. F. L. Horsfall Jr., New York.—p. 207.
- Electrophoretic Migration Velocity of *Escherichia Coli* After Cultivation on Mediums of Varying Composition: I. Observations Following Changes in Organic Constituents. R. P. Tittsler and G. P. Berry, Rochester, N. Y.—p. 213.
- Some Fundamental Investigations on Resistance of Tubercle Bacilli. H. J. Corper and M. L. Cohn, Denver.—p. 223.
- Detection of Antigenic Variants of *Brucella* by Means of an Opsonocytaphagic Test. Myrtle Munger and I. F. Huddleson, East Lansing, Mich.—p. 255.
- Colony Organization of Certain Bacteria with Reference to Sporulation. H. C. Greene, Madison, Wis.—p. 261.
- Species Specific Immunity to Hemolytic *Streptococcus* Infections Induced in White Mice by Immunization with an R Variant of an Erysipeloid Strain: Significance of Cell Autolysis in Relation to Antibody Response. Sophie Spicer and Emily L. Bloom, New York.—p. 289.
- Reduction and Concentration of Methylene Blue by Certain Pathogenic Fungi. J. W. Williams, Cambridge, Mass.—p. 303.
- Differentiation of Pathogenic *Staphylococci* from Nonpathogenic Types. G. H. Chapman, C. Berens, Edith L. Nilson and Lillian G. Curcio, New York.—p. 311.

Journal of Investigative Dermatology, Baltimore

1: 1-82 (Feb.) 1938

- Experimental Production of Xanthomas in Laboratory Animals. F. Schaaf; translated by R. L. Baer, New York.—p. 11.
- Nipple Test: Studies in Local and Systemic Effects on Topical Application of Various Sex Hormones. W. Jadassohn, E. Uehlinger and A. Margot, Zurich, Switzerland; translated by R. L. Baer, New York.—p. 31.
- Sensitization to Simple Chemicals: III. Relationship Between Chemical Structure and Properties, and Sensitizing Capacities in Production of Eczematous Sensitivity in Man. M. B. Sulzberger and R. L. Baer, New York.—p. 45.
- Further Investigations of Poison Ivy Hypersensitiveness in Guinea Pigs. R. L. Kile, St. Louis, and A. W. Pepple, Lodi, Calif.—p. 59.
- Skin Reactions: II. Effect of Allergic and Histamine Wheals on Rate of Absorption of Dyes and Blood from Human Cutis. H. A. Abramson and Margery Engel, New York.—p. 65.

Journal of Lab. and Clinical Medicine, St. Louis

23: 553-662 (March) 1938. Partial Index

- Mycologic Findings in Sputum. Mildred T. Woolley, Tucson, Ariz.—p. 553.
- Influence of Quantity of Serum Bilirubin on Type of van den Bergh Reaction. R. Gregory, Washington, D. C., and Marie Andersch, Philadelphia.—p. 572.
- Electrocardiographic Studies During Anesthesia with Intravenous Barbiturates. P. P. Volpitta and B. A. Marangoni, New York.—p. 575.
- *Incidence of Tuberculosis in a New York City Diabetic Clinic. Elaine P. Ralli and I. Steinberg, New York.—p. 581.
- *Bacteriostatic Action of Prontosil Soluble, Sulfanilamide and Disulfanilamide on Sporulating Anaerobes Commonly Causally Associated with Gaseous Gangrene. R. S. Spray, Morgantown, W. Va.—p. 609.
- Urinary Excretion of Single Doses of Sulfanilamide. J. V. Scudi and H. D. Ratish, New York.—p. 615.
- Crystal Tests for Minute Amounts of Morphine. C. C. Fulton, St. Paul.—p. 622.
- Froehde's Reagent: Reagent for Morphine and for Other Phenolic Compounds. C. C. Fulton, St. Paul.—p. 625.
- Crypt Aspiration: Spray Culture Method for Isolation of *Bacillus Dysenteriae*. J. Felsen, New York.—p. 630.
- Chemical Diagnosis of Pregnancy by Detection of Estrin in Urine: III. Modifications of Procedure and Results in 193 Determinations. M. J. Schmulovitz and H. B. Wylie, Baltimore.—p. 633.
- Further Observations on Use of Nigrosine to Demonstrate *Treponema Pallidum* in Syphilitic Lesions. R. B. Dienst, Augusta, Ga.—p. 646.
- Determination of Sulfanilamide in Cerebrospinal Fluid by Means of Sodium-Beta-Naphthoquinone-4-Sulfonate. E. G. Schmidt, Baltimore.—p. 648.
- Determination of Para-Aminobenzene Sulfonamide (Sulfanilamide) in Urine and Blood. J. Doble and J. C. Geiger, San Francisco.—p. 651.

Incidence of Tuberculosis in Diabetes.—Ralli and Steinberg investigated the occurrence of tuberculosis in the 748 diabetic patients attending the Diabetic Clinic of the Third Medical Division (Bellevue Hospital) and the Diabetic Clinic of New York University College of Medicine. The observations were made over a period of seven years. Of the 748 patients, thirty-three had active pulmonary tuberculosis, an incidence of 4.3 per cent. Excluding the one patient who was 79 years of age, the average age was 47.8 years. In twenty-nine cases the onset of the diabetes preceded any signs or symptoms of tuberculosis. The diets used by these patients were high in carbohydrate, moderate to high in fat and with a protein intake of from 65 to 85 Gm. All but one patient required insulin, and twenty-two of them required more than 30 units daily. Ten of the patients received pneumothorax. Two had, in addition, pneumolyses which were not successful. In one case there was hemoptysis which could not be controlled by pneumothorax or phrenicotomy, and the patient finally died of a bronchiogenic spread. Five of the patients, during their hospital period, left against advice and any further information about them could not be obtained. Thirteen of the thirty-three patients observed have died since they acquired tuberculosis. Ten no longer attend the clinic but as far as is known are still alive. Five of the remaining ten are now attending the diabetic clinic, having been treated successfully for their tuberculosis. The remaining five are at present in sanatoriums. In three of the five patients attending the clinic the disease is considered inactive. As the tuberculous diabetic patient is apt to have diabetes in a severe form the authors have found it advisable to give feedings four times in twenty-four hours, as the usual three meals leave the patient with no outside source of energy for a period of fourteen hours, during which time he would be forced to burn his body stores. Insulin is given with each feeding in amounts sufficient to keep the patient approximately sugar free and always acetone free. The intake of fluid and salt should be adequate. Diabetic patients become dehydrated

very readily, particularly in the presence of an infection. Therefore the patients are advised to drink ample amounts of water and to take a slight excess of salt. Normally a person takes in approximately 4 Gm. of sodium chloride as such daily. For severely affected tuberculous diabetic patients this should be increased to 6 Gm. daily or more if necessary. An adequate intake of calcium is assured by having the patient take at least three glasses of milk daily.

Bacteriostatic Action of Sulfanilamide Compounds on Sporulating Anaerobes.—Spray measured the bacteriostatic action of sulfanilamide, disulfanilamide and prontosil soluble on sporulating anaerobes commonly causally associated, alone or in combination, with human gaseous gangrene. The drugs exert an apparently specific selective action against certain species, notably *Clostridium tetani*, *lentoputrescens*, *novyi*, *septicum* and *histolyticum*. On the contrary, *Clostridium welchii* and the intensely proteolytic types, such as *Clostridium sporogenes* and *bifermentans*, as well as the toxic *Clostridium botulinum* type A, are scarcely affected, at least by any concentrations tolerated by human beings. The bacteriostatic activity increases in order: prontosil soluble, sulfanilamide and disulfanilamide. These results parallel those of Rosenthal, Bauer and Branham in testing these compounds for protection of mice against streptococcal and meningococcal infection. Admitting Bohlman's "dramatic" results in the treatment of three cases of presumably *Clostridium welchii* infections with sulfanilamide, it would seem necessary to assume some secondary therapeutic activity of the drug other than a simple and direct bacteriostatic action on the bacteria themselves.

Journal of Nervous and Mental Disease, New York

87: 405-544 (April) 1938

- Meningoencephalomyeloradiculitis: Clinicopathologic Study. P. Goolker, New York.—p. 405.
Recurring Maculopapular Exanthems as Preludes to Marked Exacerbations in Myasthenia Gravis. L. F. Barker, Baltimore.—p. 416.
Psychoses Among Followers of Father Divine. Lauretta Bender and Zuleika Yarrell, New York.—p. 418.
Huntington's Chorea and Luetic Meningoencephalitis: Histopathologic Report of Case of Huntington's Chorea Clinically and Luetic Meningoencephalitis Pathologically. T. T. Stone and E. I. Falstein, Chicago.—p. 450.
Comments on Treatment of Drug Addiction with Protracted Narcosis. W. H. Chao, Y. K. Hsu and R. S. Lyman, Peiping China.—p. 454.
Upper Motor Neuron Sequels in "Jake" Paralysis: Clinical Follow-Up Study. M. A. Zelig, Cincinnati.—p. 464.

Journal of Nutrition, Philadelphia

15: 211-320 (March) 1938

- Effect of Sulfhydryl Compounds on Milk Production. R. G. Daggs, Burlington, Vt., and Viola S. M. Liddeldt, Rochester, N. Y., with technical assistance of J. H. Fuller.—p. 211.
Paralysis in the Young of Vitamin E Deficient Female Rats. H. S. Olcott, Iowa City.—p. 221.
*Effects of Small Amounts of Ethyl Alcohol on Respiratory Metabolism of Human Subjects During Rest and Work. R. C. Grubbs and F. A. Hitchcock, Columbus, Ohio.—p. 229.
Recovery Following Suppression of Growth in the Rat. Miriam F. Clarke and A. H. Smith, New Haven, Conn.—p. 245.
Relative Effects of Certain Saccharides and of Vitamin D on Mineral Metabolism of Rats. Julia Outhouse, Janice Smith and Irene Twomey, Urbana, Ill.—p. 257.
Use of Fibrin in Synthetic Diets. J. H. Jones, Philadelphia.—p. 269.
Lack of Vitamin C in Diet and Its Effect on Jaw Bones of Guinea Pigs. Mary T. Harman, Martha M. Kramer and H. D. Kirgis, Manhattan, Kan.—p. 277.
Utilization of Energy Producing Nutrient and Protein as Affected by Plane of Protein Intake. E. B. Forbes, L. Voris, J. W. Bratzler and W. Wainio, State College, Pa.—p. 285.
Studies on Effects of Bovine Blindness-Producing Ration on Rabbits. P. H. Phillips and G. Bohstedt, Madison, Wis.—p. 309.

Effects of Ethyl Alcohol on Metabolism.—Grubbs and Hitchcock determined the effects of small amounts of ethyl alcohol on the respiratory exchanges during rest and work. Two series of experiments have been carried out on five different subjects, on whom a total of more than fifty tests were made. In the first series of experiments three subjects were used. With these subjects both control and alcohol tests were run while the subject was lying in a basal condition, while he was sitting at rest on a bicycle and while he was pedaling the bicycle at a rate of from 2,500 to 3,000 foot pounds of work per minute. In basal tests the subject reported to the laboratory in a postabsorptive condition. One or two basal metabolism determinations were made. The subject then ingested 200 cc. of water if the test was a control test, or 200 cc. of

about 10 per cent alcohol in alcohol tests. The quantity of alcohol given was from 0.25 to 0.3 Gm. per kilogram of body weight. In the work tests the dosage of alcohol was the same as that used in basal tests. In the second series of experiments about the same quantity of alcohol was ingested, but in this case it was diluted with 200 cc. of a 10 per cent solution of dextrose. Alcohol produced no specific dynamic action during the first two hours following its ingestion. There was no significant change in the ventilation equivalent or in the alveolar carbon dioxide following the ingestion of alcohol. Utilization of alcohol while resting was greater when given with dextrose than when given alone. The rate of oxidation of alcohol in the body was higher in the sitting position than when reclining and still higher when working on the bicycle ergometer than when sitting at rest. The results are interpreted as presumptive evidence that the muscles are capable of using the energy of ethyl alcohol in the performance of work.

Journal of Pediatrics, St. Louis

12: 287-428 (March) 1938

- Ear Complications of Scarlet Fever. A. L. Hoyne and R. Spaeth, Chicago.—p. 287.
*Conservative Management of Appendical Peritonitis in Children. J. M. Adams, Minneapolis, and P. M. Bancroft, Lincoln, Neb.—p. 298.
Individual Isolation. P. M. Stimson, New York.—p. 313.
Epidemic of Mouth Infection of the Newborn. L. H. Douglass, Baltimore.—p. 323.
Accidental Transmission of Malaria Through Injection of Whole Blood. F. H. Wright, New York.—p. 327.
Pubertas Praecox Due to Dextrorotational Granulosa Cell Tumor of Ovary in a Four Year Old Girl. E. Mannheimer, Stockholm, Sweden.—p. 350.
Acute Hemolytic Anemia (Lederer Type). E. H. Baxter and M. W. Everhart, Columbus, Ohio.—p. 357.
Enterogenous Cyst of Duodenum Simulating Pyloric Stenosis: Report of Case in an Infant with Recovery Following Gastro-Enterostomy. J. Basman, St. Louis.—p. 363.
Encopresis in Children. H. F. Shirley, Iowa City.—p. 367.
Quantitative Collection of Urine from Small Children. Estelle E. Hawley, Rochester, N. Y.—p. 381.

Conservative Management of Appendical Peritonitis.

Adams and Bancroft used the conservative method in treating 110 cases of appendical peritonitis in children less than 16 years of age. The surgical and pathologic observations have been analyzed in ninety-four cases in which deferred appendectomies were performed. The conservative treatment consisted of rest, continuous gastroduodenal siphonage, hot applications to the abdomen, para-oral fluids and sedatives. An incidence of more than 10 per cent in major exacerbations was observed. Deferred appendectomy is imperative in every case. The mortality in the 110 cases was 4.5 per cent. There were no deaths in the group of ninety-four deferred appendectomies. The duration was forty-eight hours or less in fifty-three cases; the largest group of cases was observed in the period between thirty-six and forty-eight hours, three, four and five days in thirty-three and widely scattered in twenty-four. There were no deaths in the extended group; all fatalities occurred in cases with histories of duration from thirty-nine to ninety-six hours. The authors consider the duration as only one factor determining the course of treatment. The progress of the disease is probably of the greatest consequence; it might be better to speak of uncomplicated and complicated rather than of early and late appendicitis. The temperature and pulse on admission were found to be of considerable assistance in deciding the question of operative or conservative treatment. The average temperature and pulse in all cases of complicated appendicitis treated conservatively was 101.7 F. and the pulse 119 per minute. In the typical case the temperature was from 102 to 103 F. with a rapid pulse of from 130 to 150 per minute. The figures are well above those ordinarily seen in cases of uncomplicated appendicitis. Many cases coming in late (after five days) tend to lower the general averages. The infection has often become well localized with a large mass in the right lower quadrant, the result sought in the conservative treatment having already been accomplished. The leukocyte count varied from 30,000 maximum to 7,400 minimum. In the late cases and those with generalized peritonitis the figure is often low, indicating a poor response to infection. The typical white blood count was more than 20,000, with 85 or more neutrophils per hundred cells. The general condition of the patient should always be evaluated as completely as possible. The state of hydration and degree of

toxicity may be of considerable assistance in deciding on operative or conservative therapy. Separation of the loops of intestine by fluid could frequently be demonstrated roentgenologically in cases of generalized peritonitis. The average duration of fever in all cases treated conservatively was 9.2 days.

Journal of Pharmacology & Exper. Therap., Baltimore

62: 263-362 (March) 1938

- Assay of Gonad Stimulating Preparations. M. C. D'Amour and F. E. D'Amour, Denver.—p. 263.
- Nembutal Anesthesia: III. Median Lethal Dose of Nembutal (Pentobarbital Sodium) for Young and Old Rats. E. B. Carmichael, University, Ala.—p. 284.
- Pharmacologic Action of Deuterium Oxide: V. Calorigenic Saturation Level and Influence of Ergotoxine. H. G. Barbour and Lillie E. Rice, New Haven, Conn.—p. 292.
- Nature of Acquired Tolerance to Alcohol. H. W. Newman and A. J. Lehman, San Francisco.—p. 301.
- Rat in Assay of Cortin. F. E. D'Amour and Dorothy Funk, Denver.—p. 307.
- Analysis of Circulatory Actions of Ethyl-norsuprarenin. W. M. Cameron, J. M. Crismon, L. J. Whitsell and M. L. Tainter, San Francisco.—p. 318.
- Action of Merthiolate on Gonadotropic Effect of Anterior Pituitary Extract. G. Chen and H. B. van Dyke, Peiping, China.—p. 333.
- Tolerance and Fate of Pressor Principle of Posterior Pituitary Extract in Anesthetized Animals. E. Larson, Philadelphia.—p. 346.

Journal of Thoracic Surgery, St. Louis

7: 351-462 (April) 1938

- Experience with Collapse Therapy for Pulmonary Tuberculosis in the Fifth and Sixth Decades. H. R. Decker, Pittsburgh.—p. 351.
- Partial Thoracoplasty for Pulmonary Tuberculosis, with Suggested Plan of Operation Including Preliminary Anterior Chondrosectomy, Together with Review of Results. O. H. Wangenstein, H. A. Carlson and W. F. Bowers, Minneapolis.—p. 365.
- Management of Excessively Mobile Mediastinum in Surgical Collapse of Tuberculous Pulmonary Cavities. B. P. Potter, Secaucus, N. J.—p. 382.
- Effect of Phrenic Nerve Interruption on Gastrointestinal Tract. F. R. Harper, Denver.—p. 398.
- *Appraisal of Closed Internal Pneumonolysis in Pulmonary Tuberculosis: Relation of Tuberculous Empyema to Operation. E. C. Drash, University, Va.—p. 411.
- *Tuberculous Empyema: Report on 154 Cases. W. Woodruff, Saranac Lake, N. Y.—p. 420.
- Pleural Endoscopy and Photography. A. Gullbring, Söderby, Uttran, Sweden.—p. 433.
- Studies of Cardiac Output of Anesthetized Dogs During Continuous and Intermittent Inflation of Lungs. G. H. Humphreys, R. L. Moore, H. C. Maier and Virginia Apgar, New York.—p. 438.
- Continuous Anterior Siphon Drainage and Irrigation of Pyopneumothorax. R. M. Franklin, Valhalla, N. Y.—p. 452.
- Selective Thoracoplasty for Persistent Basal Tuberculous Cavities. S. O. Freedlander, Cleveland.—p. 455.

Closed Internal Pneumonolysis in Pulmonary Tuberculosis.—Drash discusses the outcome of 251 separate pneumonolyses performed on 230 patients. The operation has been performed by the high frequency current and the Davidson thoracoscope. Most of the patients were receiving pneumothorax refills for from four to six months or longer. The only valid contraindication to pneumonolysis is the existence of an acute pleurisy with fluid, either serous or purulent. Successful operations can be done in chronic afebrile cases of pleurisy with effusion, provided the adhesions are not covered with fibrin and can be clearly seen. The general results, exclusive of complications, have been most satisfactory. There have been no deaths attributable to the operation. Of the cavities present, 74.8 per cent were closed. A satisfactory collapse was obtained in 86.4 per cent of the patients operated on. Sixty-four patients (27 per cent) had fluid in the pleura at the time of operation. Fourteen additional patients (6 per cent) had fluid after operation, mostly within a few days. Among the total of seventy-eight patients (33.6 per cent) who had fluid at one time or another, in six the fluid became purulent. The total incidence of clear fluid and of tuberculous empyema in the present series is well within the limits of corresponding incidence to be expected from pneumothorax alone. Therefore the evidence indicates that pneumonolysis is not an important factor in the development of intrapleural fluid. Only one patient had tuberculous empyema within less than five months after operation. Five (of ninety-nine operated on) of the six patients with tuberculous empyema came from one institution which has a high proportion of patients with moderate and far advanced pulmonary tuberculosis. Rupture of a cavity into the pleura occurred in three of these, followed

immediately by death. As they occurred three and one-half, four and one-half and nine months after operation, they were not ascribed to it.

Tuberculous Empyema.—Woodruff reviews 154 cases of tuberculous empyema occurring in the practice of local physicians and sanatoriums, with a follow-up of from three to eight years. There were forty-seven known persistent bronchopleural fistulas and forty-two known secondary infections. About half were infected from the onset by either rupture of the lung or contamination of the pleura. The rest began as straight tuberculous fluids and became infected later. Of those patients who originally had a noncontaminated tuberculous empyema and lived long enough to acquire other complications, 30 per cent finally had them either by perforation or by secondary infection. The death rate is about 30 per cent in the uncontaminated tuberculous group and about twice that for the mixed infections and for the fistulas. The problem of all empyemas is a dual one: the infection itself and the abnormal pleural space. The attempt to control the former without obliteration of the latter is difficult although sometimes possible. About 70 per cent of the straight tuberculous group have survived the infection to date.

Medical Annals of District of Columbia, Washington

7: 81-106 (March) 1938

- What May Be Done in Control and Prevention of Common Contagious Diseases. W. F. Burdick, Washington.—p. 81.
- Common Errors Committed in Handling "Neurotic" Patients. I. Rodis, Washington.—p. 86.
- Sympathectomy for Control of Pain. O. H. Fulcher, Washington.—p. 89.
- Treatment of Acute Gastric Hemorrhage. W. M. Ballinger, Washington.—p. 93.
- Comparison of Injection and Operative Treatments of Hernia. J. O. Warfield Jr., Washington.—p. 96.
- Pneumococcal Peritonitis Treated with Prontylin. W. W. Sager and W. Raffel, Washington.—p. 99.

New England Journal of Medicine, Boston

218: 325-370 (Feb. 24) 1938

- Development of Medicine and Its Trends in the United States, 1636-1936. H. E. Sigerist, Baltimore.—p. 325.
- Renal Cancer: End Results in 105 Consecutive Cases. E. R. Mintz, Boston.—p. 329.
- Doctors and Books. P. D. White, Boston.—p. 338.
- Granulocytopenia: Report of Case with Autopsy. C. C. Shaw, Bellows Falls, Vt.—p. 343.
- The Relief of Pain in Cancer. J. S. Hodgson, Boston.—p. 347.

218: 371-410 (March 3) 1938

- *Late Results Following Use of Insulin in 100 Cases of Malnutrition. H. Blotner, Boston.—p. 371.
- Pernicious Anemia Due to Entero-Enterostomy: Report of Case Cured by Reoperation. W. Richardson, Boston.—p. 374.
- Acute Pancreatitis. G. R. Dunlop and E. L. Hunt, Worcester, Mass.—p. 376.
- Posture in Anesthesia. A. H. Miller, Providence, R. I.—p. 385.
- Ruptured Aneurysm of Left Common Iliac Artery Simulating Perinephric Abscess. I. J. Zimmerman, Manchester, N. H., and C. E. Butterfield, Concord, N. H.—p. 387.
- Volvulus: Study of Twenty-Two Cases. E. D. Leonard and S. Derow, Newton, Mass.—p. 388.

Late Results of Insulin in Malnutrition.—Blotner had fifty-four women and forty-six men who were ambulatory and normal physically except for from moderate to severe malnutrition, and who had tried to gain weight by one method or another but without success. The patients usually injected 10 units of insulin three times a day about twenty minutes before meals. A few took insulin twice a day, and in rare instances the dose was increased to 20 units two or three times a day. The insulin was usually taken for from one to three months, the shortest period being two weeks and the longest seven months. A liberal diet was advised. The immediate effects were a gain in weight and an improvement in appetite, which varied in individual patients. In most cases the gain was from 3 to 4 pounds (1.3 to 1.8 Kg.) a week for the first two or three weeks; it became less marked as time progressed. Finally, the weight remained constant regardless of the administration of insulin. Most of the patients observed an improvement in general and mental condition, an increase in strength and efficiency and a better gastrointestinal function. The gain in weight appeared to be due to an actual increase in the deposit of fat and not to edema, suggested by the measuring of the fluid intake and output. The weight was followed for from one to

six years after the cessation of insulin treatment. Of the twenty-six patients observed for one year after discontinuing insulin, seventeen retained the added weight, six lost it all and three patients followed for two years, five maintained the gain, three lost the added weight shortly after discontinuing insulin and four held the weight for approximately a year and then lost it gradually during the subsequent year. Of the nineteen patients followed for three years, eleven maintained the gained weight, four lost it all within six months and four kept the weight for approximately one year and then lost it slowly over varying periods. Of the forty-three patients followed for from four to six years, twenty-six held the added weight, ten maintained the gain from one to two years and then lost it during varying intervals and seven retained about half the gained weight. Ten of the patients, listed as maintaining their added weight, continued to gain after discontinuing insulin. Four patients became from 10 to 35 pounds (4.5 to 16 Kg.) overweight for their age, height and sex; one of them became definitely obese. In some patients there was a decrease in the sugar tolerance during the period of insulin treatment, but this returned to normal shortly after discontinuing insulin. There was no permanent impairment of the carbohydrate tolerance.

New York State Journal of Medicine, New York

38: 403-482 (March 15) 1938

- Accurate Treatment of Bladder Tumors. T. J. Kirwin, New York.—p. 403.
Certain Recent Developments in Chemistry: Their Bearing on Cellular Activity. W. deB. MacNider, Chapel Hill, N. C.—p. 407.
Study of Appendicitis; 1,500 Cases at the New York Hospital. B. S. Ray, New York.—p. 412.
Relationship of Physical Therapy to Internal Medicine. J. Gutman, Brooklyn.—p. 424.
Congenital Scoliosis Due to Unusual Deformity of Vertebral Column. J. W. Ghormley, Albany.—p. 432.
Acute Pharyngeal Stenosis. R. S. Moore, Syracuse.—p. 434.
Habitual Abortion: Treatment by Injection of Pregnancy Serum. S. S. Rosenfeld, New York.—p. 440.
Public Health: A Concern of the Government. S. J. Kopetzky, New York.—p. 444.

Habitual Abortion.—Rosenfeld has been treating twenty cases of habitual abortion with about 5 cc. of normal pregnancy serum injected intramuscularly once a week. Should staining or bleeding occur during the course of pregnancy, the patient is put to bed and doses up to 10 cc. may be given two or three times a week or even daily depending on the signs and symptoms. In the absence of bleeding, patients are permitted to pursue their normal routine and duties. The diet is that usually prescribed for a normal pregnant woman with the addition of cod liver oil and viosterol. Of the twenty patients, nineteen gave birth to normal living infants.

Philippine Islands Med. Association Journal, Manila

18: 59-124 (Feb.) 1938

- *Unusual Types of Typhoid Infection. P. T. Lantin and S. B. Morales, Manila.—p. 59.
Goiter. H. A. Erickson, Manila.—p. 67.
Nondrainage in Acute Appendical Conditions. A. Y. Mandanas and A. Tanco, Manila.—p. 71.
False Labor Pains. R. R. Enrile, Pasay.—p. 75.
General Appraisal of Present Status of BCG Vaccine (Bacillus Calmette-Guérin). S. A. Francisco, Manila.—p. 83.

Unusual Types of Typhoid Infection.—Lantin and Morales cite three cases of typhoid in which no evidences of active or healed typhoid lesions were found in the intestine at necropsy. The clinical diagnosis of typhoid in case 1 was based principally on the persistent fever and the positive blood culture irrespective of the high leukocytosis. The diagnosis of typhoid was also made in case 2 because of the persistent high fever and two successive reports of positive blood culture. Case 3 is considered interesting only because of its comparative rarity for, as far as can be determined, it is the first case ever reported in the Philippines of typhoid meningitis occurring in the course of ordinary typhoid and confirmed by postmortem examination. Diagnosis of typhoid meningitis in this patient was based principally on clinical symptoms and signs of the disease, on the isolation of *Bacillus typhosus* from the purulent spinal fluid and on the purulent exudate from the meninges, made at necropsy, and further corroborated by the characteristic cellular observations in histologic sections of the brain and meninges.

Public Health Reports, Washington, D. C.

53: 363-404 (March 11) 1938

- Prevalence of Trichinosis in the United States. W. Sawitz.—p. 363.
Study of *Trichinella Spiralis* in the Hawaiian Islands. J. E. Alicata.—p. 384.

53: 405-438 (March 18) 1938

- History and Frequency of Clinical Scarlet Fever Cases and of Injections for Artificial Immunization Among 9,000 Families, Based on Nationwide Periodic Canvasses, 1928-1931. S. D. Collins.—p. 409.

53: 439-484 (March 25) 1938

- Validity of Health Service Data Gathered by the Family Survey Method. E. H. Pennell and Hazel O'Hara.—p. 439.
Study of Dental Care in Detroit, Mich. R. H. Britten.—p. 446.

Radiology, Syracuse, N. Y.

30: 277-406 (March) 1938

- *Irradiation Sickness. C. L. Martin and W. H. Moursund Jr., Dallas, Texas.—p. 277.
Roentgenologic Aspect of Silicosis. E. C. Ernst, St. Louis.—p. 285.
Clinical Aspects of Silicosis. A. J. Lanza, New York.—p. 294.
Etiology of Silicosis. R. R. Sayers and R. R. Jones, Washington, D. C.—p. 297.
Further Observations on Roentgen Diagnosis of Coronary Disease. G. Levene, Boston.—p. 309.
Absorption of Ethylene Gas Following Encephalography, with Clinical Correlation in 164 Cases. R. B. Aird, San Francisco.—p. 320.
Situation of Radiology in Medical Education in the United States and Canada. E. P. Pendergrass, Philadelphia.—p. 337.
Three Year Results in Treatment of Malignant Neoplasms with Super-voltage Roentgen Therapy. T. Leucutia, Detroit.—p. 356.
Anomalies of Lumbosacral Spine. P. C. Williams, Dallas, Texas.—p. 361.
Study of Effect of Thorium Dioxide Sol Injected in Rabbits. C. R. Orr, G. D. Popoff, R. S. Rosedale and B. R. Stephenson, Buffalo.—p. 370.
*Peripheral Blood Phenomena and Differential Response of Bone Marrow and Lymph Nodes to Hyperpyrexia. C. A. Doan, Columbus, Ohio.—p. 382.
Roentgen Visualization of Cranial Nerves After Intracisternal Injection of Thorotrast. J. Q. Griffith Jr., P. J. Hodges and W. A. Jeffers, Philadelphia.—p. 390.

Irradiation Sickness.—Martin and Moursund believe that true irradiation sickness is in most instances produced by an interference with intestinal function, so they have searched for remedies capable of counteracting functional disturbances of the intestinal tract. Best results have been obtained from the intravenous administration of a liter of 5 or 10 per cent dextrose made up in physiologic solution of sodium chloride. This medication can be given repeatedly and is particularly helpful in the treatment of cases in which abdominal masses are producing partial intestinal obstruction. Holmes and Hunter believe that a high carbohydrate intake is helpful. Davis states that a lack of vitamin B₁ produces anorexia and degenerative changes in the intestinal tract. A series of animal experiments was carried out in an effort to show that thiamin chloride (crystalline vitamin B₁ hydrochloride) might be capable of producing protection against the lethal abdominal dose of x-rays. Although small animals could not be uniformly protected, large doses of thiamin chloride seemed to prolong definitely the lives of some of them. The substance was tried in clinical practice. The drug is given by mouth, and intramuscular injection is resorted to only when vomiting occurs. This form of medication not only reduced or completely abolished all nausea but enabled the patients to enjoy most of their meals and to maintain their nutrition even while receiving a long series of treatments over the abdomen. In many instances nausea and vomiting occurred during the first few days of treatment but completely disappeared during the remainder of the period, which often lasted for several weeks. It appears that several days is required for the body to become saturated with the substance. For this reason 2,000 international units is given daily for at least two days before treatment is started. This procedure has definitely minimized the symptoms observed during the early period. That saturation is necessary for relief is also indicated by the fact that, when vomiting occurs, it can frequently be relieved almost immediately by the intramuscular injection of 2,000 international units of thiamin chloride. The following routine for patients about to undergo heavy irradiation has been adopted: 1. A high carbohydrate diet is given. 2. Thiamin chloride 2,000 international units is given daily by mouth, beginning two days before the irradiation is started. 3. If vomiting occurs, 2,000 international units of thiamin chloride is given intramuscularly. 4. If relief does not occur within thirty minutes, 6 grains

(0.4 Gm.) of sodium amytal or an equal amount of another soluble barbituric acid derivative is given by rectum or a pentobarbital sodium suppository is inserted. 5. If vomiting persists, 1 liter of 5 per cent dextrose in physiologic solution of sodium chloride is given intravenously and repeated if necessary. As a rule, dextrose intravenously is needed only when some serious complication such as partial intestinal obstruction or abdominal infection is present.

Response of Bone Marrow and Lymph Nodes to Hyperpyrexia.—Doan made a study of the cellular reactions during hyperpyrexia induced by the hypertherm and fever induced by the intravenous inoculation of typhoid vaccine and by malaria inoculations. There is a rather constant hemopoietic response to "fever" and the majority of the cells making up the postfebrile leukocytosis are polymorphonuclear neutrophils newly delivered by the bone marrow. This part of the reaction may be nonspecific. There is a destruction of lymphocytes during hyperpyrexia. There is probably some destruction or redistribution of monocytes, as shown by a delayed monocytosis made up primarily of younger forms. The hemograms following malaria and *Bacillus typhosus* inoculations differ from those observed during fever induced by physical methods in the marked leukopenia during the chill, in the temporary disappearance of the monocyte from the circulation following typhoid and in the marked stimulation of the monocyte in malaria and its moderate stimulation following typhoid vaccine. The shift to the left in the neutrophilic granulocytes in malaria is noteworthy and the appearance of clasmotocytes in the peripheral blood has been observed with no other type of fever study. The profound stimulation of phagocytic clasmotocytes observed in malaria provides an important cellular defense weapon in the treatment of syphilis of the central nervous system, which is not available when other fevering methods are employed. While biopsy of the sternal marrow following hypertherm fever therapy did not show an increase in clasmotocytes, there was a tremendous increase in these phagocytic cells elsewhere in the tissues, more especially in lymph nodes, spleen and liver. To that extent, at least, artificial hyperthermia by physical means not only provides the thermal factor of importance for the inactivation of *Spirochaeta pallida* and the gonococcus but has now been demonstrated to exert a profound effect on the cellular equilibriums of the body.

Surgery, Gynecology and Obstetrics, Chicago

66: 563-690 (March) 1938

- Effect of Subcutaneous Injections of Concentrated Spleen Extract on Mouse Sarcoma 180. R. Lewisohn, New York.—p. 563.
Malignant Adenoma of Thyroid: Local Recurrences in Veins of the Neck. A. Graham, Cleveland.—p. 577.
Studies on Circulation in Pregnancy: II. Vital Capacity Observations in Normal Pregnant Women. K. J. Thomson, Mount McGregor, N. Y., and M. E. Cohen, Boston.—p. 591.
Biliary Disease in Young Subjects. A. H. Potter, Springfield, Ohio.—p. 604.
*Visceral Metastasis from Rectal Carcinoma. C. E. Brown and S. Warren, Boston.—p. 611.
*Vitamin Oils in Treatment of Burns: Experimental Study. C. B. Puestow, H. G. Poncher and H. Hammatt, Chicago.—p. 622.
Relation of Catgut Sensitivity to Wound Healing. C. J. Kraissl, Beatrice M. Kesten and J. G. Cimiotti, New York.—p. 628.
Surgical Procedures for Biliary Calculi. E. C. Cutler and R. Zollinger, Boston.—p. 637.
Fractures of Neck of Femur: Critical Analysis of Fifty Consecutive Cases. M. Cleveland and D. M. Bosworth, New York.—p. 646.
Aseptic Ureterointestinal Anastomosis. J. I. Farrell and Y. Lyman, Evanston, Ill.—p. 657.
Spurs of the Os Calcis. A. Steindler and A. R. Smith, Iowa City.—p. 663.
Extent and Character of Peptic Ulcers and Gastroduodenitis in Different Countries. H. May, Philadelphia.—p. 666.
Advanced Extra-Uterine Pregnancy. M. A. Novey, Baltimore.—p. 671.
Anaerobic Infections Following Operations on Urinary Tract. W. H. Mencher and H. E. Leiter, New York.—p. 677.

Visceral Metastasis from Rectal Carcinoma.—From a study of 170 rectal carcinomas with complete postmortem observations, Brown and Warren attempt to evaluate the importance of invasion of the local blood vessels as compared with neoplastic lymph nodes in predicting the occurrence of visceral metastases. They observed also the influence of such factors as the histologic type, extent and location of the primary growth, duration of the disease, age and sex on the development of visceral metastases. This series represents only a

portion of patients with rectal carcinoma treated in four hospitals over a period of ten years. The tendency of rectal carcinoma to metastasize by way of the blood stream varies in general with the degree of differentiation. Malignant adenoma produced visceral metastases in 23 per cent of the cases, adenocarcinoma in 49 per cent and carcinoma simplex in 56 per cent. Mucinous carcinoma has a marked tendency to metastasize by way of the lymphatics. The longer the duration of rectal carcinoma, the greater are the number of visceral metastases. There was a 5 per cent metastasis of rectal carcinoma to bone. The more the primary growth penetrates the intestinal wall, the greater are the chances of blood-borne metastasis. The reliability of prognosis of visceral metastases by observation of local intravascular invasion, and to a less extent by lymph node metastasis, increases with the duration of the disease. Visceral metastasis was observed in 41 per cent of the cases; 61 per cent showed local intravascular invasion and 67 per cent of these showed visceral metastases, closely paralleling the 66 per cent of visceral metastases with positive lymph nodes. Only one case of the seventy showing visceral metastases failed to show local intravascular invasion, whereas twenty-four of these cases failed to show positive lymph nodes; that is, 24 per cent of the patients with negative nodes had visceral metastases. Sections of the primary growth in rectal carcinoma should be scrutinized carefully for invasion of capillaries or veins by tumor, because intravascular invasion frequently means visceral metastases, and its absence, provided at least three sections from different parts of the growth are examined, nearly always rules out visceral metastasis. Its efficiency in predicting visceral or bone metastasis outranks that of neoplastic lymph nodes.

Vitamin Oils in Treatment of Burns.—Puestow and his associates produced controlled burns on pigs and rabbits and treated them with ointments containing varying amounts of vitamin A and vitamin D. The time and character of local wound healing was determined and compared with untreated controls and burns treated with tannic acid. Burns treated with 5 per cent fresh tannic acid solution healed in the same length of time as untreated controls of similar average size. The application of vitamin free olive oil ointment to slightly larger burns was followed by complete healing in the same length of time as the controls. Cod liver oil ointment shortened the period of healing by 25 per cent. Burns which averaged 50 per cent larger than the controls were treated with three high vitamin ointments: containing no vitamin A but high in vitamin D, having a low vitamin A to vitamin D ratio and having a high vitamin A to vitamin D ratio. The time of healing was approximately 25 per cent shorter than in the smaller control lesions and those treated with tannic acid. It was no longer than in the smaller lesions treated with cod liver oil ointment of low vitamin content. The response to the various high vitamin ointments employed was approximately the same. Histologic studies of the scars of all healed burns revealed no characteristic difference for the various therapeutic agents employed.

Texas State Journal of Medicine, Fort Worth

33: 727-790 (March) 1938

- Haliteresis as a Medical Problem. W. W. Watkins, Phoenix, Ariz.—p. 732.
Transperitoneal Closure of Vesicovaginal Fistula. F. S. Schoonover Jr., Fort Worth.—p. 739.
Correlation of Roentgenologic Findings with Pathology of Bone Tumors. J. B. Johnson and W. J. Stork, Galveston.—p. 741.
Significant Endocrine Advances in Gynecology. D. M. Bush, Dallas.—p. 744.
Fibromyomas of Uterus. R. T. Goodwin, San Antonio.—p. 748.
Fungus Infections of Lungs. A. E. Greer, Houston.—p. 750.
Tumors of Larynx as Visualized by Suspension Laryngoscopy. F. E. LeJeune, New Orleans.—p. 756.
Conjunctival Granuloma with Adenopathy. V. R. Hurst, Longview.—p. 760.
*Old Tuberculin: When Useful. E. H. Cary, Dallas.—p. 762.
Osteomyelitis of Frontal Bones Complicating Frontal Sinusitis. R. M. Hargrove, Houston.—p. 767.
Sporotrichosis. C. T. Kennedy, Greenville.—p. 771.

Old Tuberculin.—Cary has frequently observed certain intra-ocular and extra-ocular lesions which responded to the intradermal use of old tuberculin. Occasionally a lesion of the middle ear, unresponsive to any local treatment, was cured promptly following intradermal injections of old tuberculin.

There are many inflammatory reactions difficult to classify which readily subside when old tuberculin is used. Lesions which respond favorably to old tuberculin do not occur in active tuberculosis. Persons who are allergic and who have developed this hypersensitivity from an early infection, which has been well circumscribed, need not be disturbed greatly by the cautious use of old tuberculin. The author uses one-fourth minim (0.016 cc.) of stock old tuberculin intradermally in the beginning and increases the quantity as needed.

Virginia Medical Monthly, Richmond

65: 123-186 (March) 1938

- Some Modern Problems in Skin Cancer. C. A. Simpson, Washington, D. C., and F. A. Ellis, Baltimore.—p. 123.
Paroxysmal Hemoglobinuria: Report of Case. S. C. Hall Jr. and E. E. Barksdale, Danville.—p. 126.
Emotion-Reason Balance. B. R. Tucker, Richmond.—p. 128.
General Considerations in Diagnosis of Heart Disease. J. F. Waddill, Norfolk.—p. 131.
Treatment of Carcinoma of Cervix. R. H. Hoge, Richmond.—p. 136.
Observations of 100 Gonorrheal Infections Treated by Recent Methods. W. W. S. Butler, Roanoke.—p. 140.
Multiple Polyposis of Colon: Survey of Surgical Methods of Treatment and Report of Unusual Case. F. P. Coleman, Ann Arbor, Mich.—p. 144.
What Supportive Evidence Is There That Lymphopathia Venerea Is a Distinct Disease Entity? H. E. Bacon, Philadelphia.—p. 147.
Convenient Method for Fractionation of Liver Extracts and Preparation of Parenteral Anti-Pernicious Anemia Extract. J. C. Forbes and W. A. Peabody, Richmond.—p. 151.
Gun Powder Injury to the Eyes. L. B. Sheppard, Richmond.—p. 152.
Comparative Study of Etiologic Factors in Allergic and Psychopathologic Conditions. W. Marshall, Appleton, Wis., and J. S. Tarwater, Tuscaloosa, Ala.—p. 154.
Ulcers of Anorectal Region. M. Silbermann, Boston.—p. 162.
Premature Twins: Identical. V. E. Lascara, Norfolk.—p. 165.

65: 187-250 (April) 1938

- Advances in Treatment of Pelvic Inflammation. C. R. Robins, Richmond.—p. 187.
Early Recognition and Management of Neurosyphilis. J. King, Radford.—p. 190.
Stone in Urinary Tract: Present Concepts of Etiology and Preventive Therapy Against Recurrence. L. D. Keyser, Roanoke.—p. 195.
Appendicitis: Its Diagnosis and Improved Methods of Treatment. J. S. Horsley, J. S. Horsley Jr. and G. W. Horsley, Richmond.—p. 207.
Some Observations on My Eight Years' Experience in a Modern Mental Hospital. A. D. Hutton, Marion.—p. 213.
*Report of Fifteen Underweight Cases Treated with Insulin and Diets. J. T. N. McCastor and Mary Cousins McCastor, New York.—p. 216.
Treatment of Congestive Heart Failure. P. D. Camp, Richmond.—p. 221.
Value of Gastrosocopy. F. A. J. Geier, Washington, D. C.—p. 225.
Atrophic Cirrhosis of Liver: Case Report. E. R. Moorman, Kilmarnock.—p. 227.
Acute Staphylococcal Osteomyelitis and Staphylococcemia Treated with Staphylococcus Antitoxin and Prompt Surgical Drainage: Case. J. E. Jacobs and W. R. Haas, Durham, N. C.—p. 231.
Air Embolism or Pleural Shock: Report of Two Cases. G. S. Hartley and F. H. Yorkoff, Clifton Forge, Va.—p. 234.

Underweight Patients Treated with Insulin.—The McCastors treated fifteen underweight adult patients with insulin plus high caloric diets combined with vitamins. The typical patient in this group presented the picture of malnutrition—the long asthenic type with visceroptosis and anemia. Gastrointestinal symptoms were most prevalent; nausea, constipation, flatulence, dizzy spells, lethargy, vague back and leg pains were listed by some of the group. Anorexia also was a common symptom, while others simply could not gain weight in spite of good appetites. All had tried various plans for gaining weight. The initial dose of insulin was from 5 to 30 units two or three times daily. Some who were employed found it impossible to take the midday injection. Each patient was given a diet sheet with instructions to keep a food diary. Additional vitamins also were given. The activities of the patients were in no way curtailed. The increase in weight varied from 4 pounds (1.8 Kg.) in two days to 18 pounds (8 Kg.) in twenty-two days. Striking changes were displayed in the patients in from three to five days after the initiation of treatment. The hypochondriac was no longer conscious of his "heart pain," backache and fits of depression. Reactions were both local and general. Four patients at about 11 a. m. experienced subjective symptoms of nervousness and dizziness with a slight degree of nausea. This was soon eliminated by the taking of sugar at 10 a. m. All but two of the patients were candidates for various civil service appointments for which weights were specified.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Radiology, London

11: 129-200 (March) 1938

- Biologic Action of X-Rays: Theoretical Review. J. A. Crowther.—p. 132.
Reaction of Bones of Skull to Intracranial Lesions. M. H. Juge.—p. 146.
Developmental Abbreviation of Terminal Phalanges. H. J. Burrows.—p. 165.
Wavelength as Factor in Radiotherapy. G. F. Stebbing.—p. 177.
*Regional X-Ray Baths in Treatment of Lymphadenoma. W. M. Levitt.—p. 183.
Small Flexible 2 Gm. Radium Unit, with Arrangements for Removal of 1 Gm. in Form of Applicator. C. W. Wilson and N. H. Pierce.—p. 189.

Regional Irradiation in Treatment of Lymphadenoma.—Levitt considers the third stage of lymphadenoma (multiple lesions with visceral involvement and advancing cachexia) and its treatment by wide regional irradiation (roentgen bath) which has been in use at St. Bartholomew's Hospital for ten years. If precautions are observed, doses of x-rays can be applied with safety to extensive regions of the body, e. g., the whole abdomen or the whole chest, which are comparable with the doses ordinarily given to localized lesions. The method is applicable to the treatment of lymphadenoma and of radio-sensitive malignant neoplasms such as seminoma. The thoracic bath is indicated in cases in which the disease involves the mediastinum and lung fields, with or without axillary and cervical glands, or the mediastinal and axillary, with or without cervical glands. Masses in the abdomen without known thoracic involvement require an abdominal roentgen bath. The trunk bath is not without danger, and at present it is being used only in selected cases of both thoracic and abdominal disease in which the general condition of the patient has not deteriorated too far. High voltage rays are used with four oblique fields, overlapping completely. The focus skin distance must be sufficient to cover fully the area exposed. The patient is carefully protected by lead rubber from radiation above the upper limit and below the lower limit of the fields to be exposed. The whole section of the patient is exposed to the beam in each case. Treatment is begun with small doses, which are gradually increased until the patient is taking daily doses to large sections of the body. In the thoracic bath the two anterior oblique fields are applied with the patient in the supine position and the two posterior fields in the prone position. Treatment is begun with thirty-five surface roentgens to one field. The fields are treated in turn day by day, and the dosage is increased cautiously until the patient is taking as much as 200 roentgens to this enormous field in a day. Blood counts are carried out about every five days and, in the absence of a contraindication, treatment is continued until a dose of 1,000 roentgens has been applied to each field over a period of about a month. The blood counts show a steady fall in leukocytes with the incidence on the lymphocytes as the treatment progresses, but it is only when the total leukocyte count falls to 1,200 or the lymphocytes to 200 that this is regarded as a contraindication to the continuance of the treatment. In the abdominal bath the upper limit is at the level of the ensiform cartilage and the lower includes the groin gland areas. Treatment is begun with twenty-five surface roentgens and may be increased gradually to about 150 surface roentgens. The total dosage is, as in the thoracic bath, about 1,000 surface roentgens to each field. In the trunk bath the field extends from the mandible down to below the groin gland areas, the limbs being very carefully protected. Treatment is begun with twenty surface roentgen doses and increased to as much as 125 surface roentgens daily. Total dosage is from 600 to 750 surface roentgens to each field. In addition to the fall in leukocytes, hemorrhages and petechiae on the limbs are indications for the immediate cessation of the treatment. Recovery can occur after the stage of hemorrhages and petechiae has been reached. Results are good in the thoracic and abdominal baths, in the sense that superficial and deep masses in the regions treated disappear, cachexia is relieved and the patient returns often to an apparently normal state of health and to his work. The most remarkable results are obtained in the trunk baths. Of seven consecutive patients

were given trunk baths in 1932, 1933 and 1934, three are alive and well, some having had intermediate treatment. Two died as a direct result of the treatment. Five had lymphadenoma, one a seminoma and one a sensitive ovarian tumor. These methods of treatment, in the case of the regional baths, are safe and valuable, but the trunk bath is dangerous and still under trial. Its use is justified only in hopeless cases.

British Medical Journal, London

1: 433-498 (Feb. 26) 1938

Trauma of the Heart. H. Barber.—p. 433.
Changes in Liver of Male Rats After Castration and Injections of Sexual Hormones. Kathleen Hall and V. Korenchevsky.—p. 438.
Scapulohumeral Periarthritis (Duplay's Disease). A. H. Douthwaite.—p. 441.
Study of Miners' Nystagmus. R. S. Brock.—p. 443.
Manipulative Treatment of Intestinal Spasm. J. H. Cyriax.—p. 445.
Chronic Litritis. R. C. Webster.—p. 448.

1: 499-550 (March 5) 1938

Pregnancy and Lactation Changes in Fibro-Adenoma of the Breast. C. F. Geschickter and D. Lewis.—p. 499.
Pneumonitis. A. M. Gill.—p. 504.
Spontaneous Disappearance of Carcinoma. D. Chamberlain.—p. 508.
The Plantar Wart: Verruca Plantaris; Verruca Pedis; Plantar Papilloma. R. M. B. MacKenna.—p. 509.
Intrathecal Alcohol Injection for Relief of Pain: A Review. Constance Ottley.—p. 510.
Effect of Iron Administration in Cases of Subnutrition. E. Blackstock and J. M. Ritchie.—p. 512.

Irish Journal of Medical Science, Dublin

No. 147: 97-144 (March) 1938

Functional Nerve Disorders in Ireland: Scheme for Their Consideration and Treatment. J. P. F. Waters.—p. 97.
Vaccine Treatment of Pneumonia in Childhood. J. Mowbray.—p. 105.
The Thymus Myth. T. G. Wilson.—p. 113.
Surgical Visit to Berlin and Bruges. F. J. Henry.—p. 118.
Obstetric Shock. J. K. Feeney.—p. 121.

Journal of Tropical Medicine and Hygiene, London

41: 69-88 (March 1) 1938

Pathologic Lesions in Australian Aborigines, Central Australia (Granites) and Flinders Range. E. C. Black and J. B. Cleland.—p. 69.

Lancet, London

1: 417-478 (Feb. 19) 1938

Pulmonary Tuberculosis: Relation of Childhood Infection to Disease in Adults. A. Wallgren.—p. 417.
*Gastric Lesion in Pernicious Anemia. H. A. Magnus and C. C. Ungley.—p. 420.
Alcoholic Labyrinthine Injection Through Oval Window in Treatment of Aural Vertigo. R. Peacock.—p. 421.
Arteritis of Temporal Vessels. G. H. Jennings.—p. 424.
Leiomyoma of Stomach. B. R. Sworn and T. V. Cooper.—p. 428.
*Surgical Treatment of Bell's Palsy. W. M. Morris.—p. 429.
Action of Curarine on Respiration. R. West.—p. 432.

The Gastric Lesion in Pernicious Anemia.—Magnus and Ungley examined the stomach in seven cases of pernicious anemia. Macroscopically the upper two thirds of the stomach showed such atrophy that this area was reduced to the thinness of parchment. At the junction of the body with the pyloric mucosa, however, there was a transition, usually abrupt, to the normal thickness of the wall of the stomach and this was maintained throughout the whole of the pyloric antrum and duodenum. The mucosal surface in the upper atrophic region was flattened and a normal gastric mucosa could no longer be seen, while in the pyloric region the mucosal surface was normal. These appearances are so characteristic that it is possible to recognize the stomach from a case of pernicious anemia by naked-eye examination. Microscopic examination confirmed the naked-eye distribution of the atrophy. In the mucosal region there was atrophy involving all the coats of the wall of the stomach. In the mucosa all that remained was the surface epithelium and a few scattered glands, while the specialized oxyntic and peptic cells disappeared entirely. Yet there was absence of fibrosis, cellular infiltration, obliterative endarteritis or other evidence of past inflammation; there was a corresponding absence of fibrosis in the submucosa and subserosa. The muscular coat showed atrophy, but here also fibrosis was absent. In all seven stomachs there was no suggestion of atrophy or of an inflammatory lesion in the pyloric or duodenal mucosa; Brunner's glands also showed no abnormality. It has been generally assumed that the gastric lesion in pernicious

anemia is the end result of an inflammatory gastritis, but their material indicates to the authors that this is not so. The gastric lesion is to be regarded as an atrophic process, the cause of which is not yet known but which may be the end result of some endocrine or nutritional deficiency or may even be congenital. From its nature it is unlikely that regeneration to a normal gastric mucosa ever occurs.

Surgical Treatment of Bell's Palsy.—Morris believes that a period of from six weeks to two months is the limit of time a case of Bell's palsy should be treated expectantly, when there is no evidence of voluntary movement of the facial muscles. If faradic response is lost, or the reaction of degeneration can be obtained before this, the sooner decompression of the nerve is carried out the more chance has the patient of complete recovery. When a paralysis has been treated expectantly with some recovery and then comes to a standstill, further improvement may be anticipated by decompression and, in the cases of longer duration, introduction of an "inlaid graft," which by chemotaxis will stimulate the existing active fibers of the nerve. The operation should not be attempted in any case in which the presence of muscular tissue cannot be demonstrated. In the twelve cases discussed there has been recovery, complete in the early ones and partial in the long-standing ones.

Medical Journal of Australia, Sydney

1: 321-364 (Feb. 19) 1938

Development of Study of History of Medicine. L. Cowlshaw.—p. 321.
Retina of the Australian Mammal. K. O'Day.—p. 326.
Some Results Achieved by Tuberculin Therapy. L. Elwell.—p. 328.
Tennis Elbow. E. F. West.—p. 330.
Is the Hospital Treatment of Scarlet Fever Worth While? F. V. Scholes.—p. 331.
Common Skin Diseases Met with in General Practice. L. W. Linn.—p. 335.
Coming of Medicine to Tasmania: Some Early Medical Men and Their Environment. W. E. L. H. Crowther.—p. 340.
Relation of Myasthenia Gravis and Allied Conditions to "Prostigmine" Therapy. L. B. Cox.—p. 344.
*Copper Sulfate Treatment of Tropical Ulcer and New Guinea Mouth Disease. C. E. M. Gunther.—p. 348.

1: 365-416 (Feb. 26) 1938

Attempt to Immunize Lambs Against Hydatid Disease. H. B. Penfold.—p. 375.
Indications for Splenectomy in Pediatric Practice. L. Dods.—p. 377.

Copper Sulfate Treatment of Tropical Ulcer.—Gunther states that tropical ulcer and New Guinea mouth disease differ only as to the site of occurrence; each is fundamentally due to food deficiency, each presents a foul, sloughing ulcer, from each a spirochete and a fusiform bacillus can be isolated and each responds to the same form of treatment. The two conditions are almost entirely confined to natives. The first essential in general treatment is a diet rich in vitamins. The patients are not given rice but receive abundance of fresh vegetables; an autolyzed yeast preparation and cod liver oil are added. In local treatment copper sulfate acts with such rapidity in comparison with other forms of treatment that it can be regarded as specific. It is best used as a solution of 1 in 150 approximately. It is applied as a wet compress to ulcers and employed as a mouth wash in New Guinea mouth disease and as a continuous bath for tropical ulcer. No ill effects have been observed from its use.

South African Medical Journal, Cape Town

12: 111-154 (Feb. 26) 1938

Conservative Gynecologic Surgery. V. Bonney.—p. 113.
A Visit to the Cleveland Clinic. W. P. Steenkamp.—p. 118.
Diseases of the Blood in Practice. C. D. Brink.—p. 119.
Treatment of Renal Calculi, with Especial Reference to Their Solution by the Aid of Diet and Drugs. V. Vermooten.—p. 127.
*Kidney Growths in the Upper Pole: An Early Diagnostic Sign. R. C. Begg.—p. 131.

Kidney Tumors in the Upper Pole.—Begg states that dilatation of the subcostal vein alone is an early sign that tumor of the upper pole exists. This dilatation arises from the peculiar anatomic position of that structure. The subcostal vein passes in front of the quadratus lying between it and the kidney. It is thus a posterior relation of the upper part of the organ. The sign is thus the more valuable, as tumors of the upper pole may reach a considerable size before either they or the lower

pole of the kidney itself are palpable. This dilatation may be little marked and may be perceptible only by comparison with the other side. It is most obvious after the patient has been standing or walking for a while before the examination. It appears either in the form of a linear vein like a blue pencil mark passing obliquely upward and outward between the anterior superior spine of the ilium and the umbilicus—nearer the former than the latter—or as a distinct tracery of small veins at the outer border of the rectus muscle 2 inches above the level of the upper margin of the symphysis pubis. If distinct unilateral dilatation confined to the radicles of the subcostal vein is seen, pathologic changes of the upper pole of the corresponding kidney must be considered and investigation carried out. When renal tumor is suspected because of hematuria or bony metastases of unknown origin, the sign helps to indicate the side affected and should be taken into account when the pyelogram is inconclusive.

Tubercle, London

19: 241-288 (March) 1938

*Incidence and Prevention of Tuberculosis in American Schools and Colleges. E. R. Long.—p. 241.

Phrenicectomy in Treatment of Pulmonary Tuberculosis. P. W. Edwards and J. S. T. Stevens.—p. 252.

Two Examples of Localized Bronchiectasis. A. S. Hall.—p. 278.

Tuberculosis in American Colleges.—Long states that studies continued over a decade indicate that the proportion of elementary and high school children positive to the tuberculin test is steadily falling. In the less crowded communities the drop is more striking than in large, congested cities. The incidence in rural communities is generally significantly lower than in urban areas, and differences within the same community are always found corresponding to the economic level. Important tuberculous disease is first encountered in an appreciable extent in high school students, where the combined incidence of latent and manifest disease varies from 1.5 to nearly 3 per cent, being higher among girls. Important disease demanding care occurs in from 0.5 to 1 per cent of these children. Active programs for the early detection and control of tuberculosis in schools now operate throughout the country. The basic principles of these programs are mass tuberculin testing, x-ray examination of the positive reactors and provision of suitable care for those found to have lesions. In the colleges about six students per thousand have tuberculosis of the adult type. The average incidence of infection for the country as a whole is from 30 to 35 per cent. A marked variation occurs geographically, students from the great central portion of the country having a relatively low incidence. Tuberculosis is recognized as the most serious disease of the college period yet as insidious in onset, requiring routine mass-measures for its detection. Most of the lesions now discovered are in the minimal stage. Students of medicine and nursing are now known to be subject to a special hazard. The danger for medical students seems greatest during the third and fourth, or clinical, years, suggesting that tuberculosis acquired in the medical school is usually exogenous. Most nurses who are tuberculin negative on beginning training become positive to tuberculin during their course. The incidence of clinical tuberculosis is also proportionately high as compared with other professional or working groups at the same age, both during the period of training and in the first years after qualification.

Chinese Medical Journal, Peiping

53: 1-108 (Jan.) 1938

Adamantinoma: Clinical Study of Twenty-Six Cases. H. T. Kimm and A. F. Baranoff.—p. 1.

Alkalosis and Alkaline Treatment of Peptic Ulcer. K. C. Wang.—p. 23.

Spinal Anesthesia in China (1931-1935): Review of 11,118 Cases. M. T. Yang.—p. 37.

Infections Observed in Experimental Animals Fed on Certain Unbalanced Diets. H. C. Hou.—p. 47.

Anomalous Pyramidal Decussation in the Chinese. T. W. Chang.—p. 53.

Carcinoma of Esophagus: Report of Fifty-Nine Cases. K. C. Lang.—p. 57.

Carcinoma of Middle Ear and Its Treatment: Report of Case. T. P. Chou.—p. 64.

Malignancy of Nasopharynx and Eustachian Tube. A. M. Dunlap.—p. 68.

Rheumatic Fever Treated with Vitamin C: Case. F. H. Mosse.—p. 72.

Bulletin Médical, Paris

52: 217-234 (March 26) 1938

*Icterus by Cholelithiasis. M. Brulé.—p. 217.

Cholemia Without Icterus. E. Chabrol, A. Bussan, J. Cottet and A. Mathivat.—p. 222.

Edemas in Patients with Hepatic Disorders. A. Lemaire.—p. 225.

Precitric Migraine. J. Caroli.—p. 230.

Icterus Produced by Cholelithiasis.—Brulé points out that, whereas the majority of the infectious forms of icterus are diseases of the liver and not of the biliary tract, there are cases in which an inflammatory obstruction of the choledochus is the causal factor. An essential symptom of this form of icterus is a considerable enlargement of the liver. This hepatomegaly is often accompanied by splenomegaly, but there is no sign of enlargement of the gallbladder. The author points out further that the icterus produced by cholelithiasis is observed especially in persons between 25 and 30 years of age, but it has been observed also in children and in aged persons. It seems to be especially frequent in males. The onset may resemble that of catarrhal icterus with a precitric period of gastrointestinal disturbances, with pains in the right hypochondrium and perhaps with articular and muscular pains; but it may also appear insidiously, like cancer of the pancreas. The duration varies; whereas the primary cholelithiasis yields quickly to duodenal tubage, in the majority of patients, who have been icteric long before the first tubage, the disorder remains for a long time. After commenting on the origin and reporting a case, the author emphasizes that the icterus by cholelithiasis is much less frequent than the icterus by hepatitis. Nevertheless, in spite of the relative rarity, it is important that the possibility of a cholelithiasis be taken into consideration in cases of icterus that are accompanied by progressive hepatomegaly, for treatment may be effected rapidly by means of duodenal tubage. The author believes with F. Ramond that the intraduodenal administration of solution of magnesium sulfate or of olive oil (he always employs the two successively) provokes an aspiration by successive contraction and relaxation of the duodenum, thus draining the choledochus. In the cases in which treatment is begun early a single tubage may be adequate, but in cases of greater duration repetitions may be necessary.

Gynécologie et Obstétrique, Paris

37: 161-240 (March) 1938. Partial Index

Cancerization of Cervical Stump After Subtotal Hysterectomy. G. Cotte and A. Notter.—p. 161.

Contradictory Appearing Results of Biologic Pregnancy Reaction, Observed in Case of Chorionepithelioma. R. Keller and J. Limpach.—p. 168.

*Transfusion of Placental Blood Employed Before and After Gynecologic Operations in Maternity Hospital in Strasbourg. R. Keller and J. Limpach.—p. 173.

*Therapeutic Value of Injections of Estrogen in Undesirable Lactal Production. J. Adrian.—p. 178.

*Determination of Quantity of Estrogenic Hormone in Women: Criticism of Results and Study of New Test. A. Durupt.—p. 183.

*Diagnostic Value of Capillaroscopy in Pregnancy and in Puerperal Sepsis. S. M. Melbard.—p. 200.

Transfusions of Placental Blood.—Keller and Limpach point out that in obstetrics blood transfusion is the method of choice in the treatment of the profuse hemorrhages. In gynecology they utilize its hemostatic effect in metrorrhagia and in the oozing of blood after operation. Leriche demonstrated that blood transfusions are helpful in the prophylaxis of post-operative complications and that transfused patients are better able to cope with the risks involved in all interventions. Since it was difficult to secure donors, they resorted to the use of placental blood, which they were able to obtain in their obstetric service. Placental blood has a high content in erythrocytes, leukocytes and hemoglobin. Of course the placental blood should be derived from healthy parturient women. After the child is born, the umbilical cord is grasped with a sterile forceps, cut and carefully disinfected. The first few drops of blood are placed in a test tube containing a solution of potassium oxalate (potassium oxalate, sodium chloride and water). This mixture is centrifuged and conserved to test the compatibility. Then the placental blood is collected in a glass container, previously rinsed with 5 cc. of a 10 per cent solution of sodium citrate. While the blood is flowing, the container is shaken mildly. The average amount of placental blood obtained after each delivery is from 60 to 90 Gm. The

blood is stored at a temperature of 2 C. and is utilized within thirty-six hours. From 4 to 5 cc. of blood is withdrawn from the patient who is to receive the transfusion. Following centrifugation, two drops of the serum of the recipient is mixed with one drop of the donor's blood that had been collected in the test tube with the sodium citrate. The mixture is observed for from five to ten minutes and the macroscopic observation is followed by microscopic control. If there is no sign of agglutination, the transfusion can be made. The container with the blood is placed for a time in a water bath at 38 C. Then the blood is filtered through three thicknesses of sterile gauze into a graduated cylinder that has been rinsed with physiologic solution. Then the blood is introduced into the vein of the recipient. This method of indirect transfusion has proved entirely satisfactory.

Estrogen in Undesirable Lactation.—Adrian resorted to the treatment with estrogen, with the exclusion of all other therapeutic measures, in all cases in which an inhibiting treatment of the mammary secretion was justified, such as in cases of pulmonary tuberculosis, in cardiac defects of the mother, in stillbirth or in early death of the infant. In some cases three injections of 20,000 international units are required; in other cases a single injection of this quantity is sufficient. This treatment proved successful in 57 per cent of 100 cases. In the other 43 per cent the results were insufficient in that the secretion with expression of the breast persisted after the treatment. However, the result was nevertheless considerable in that the painful tension in the breasts, as well as the spontaneous secretion, ceased.

Determination of Estrogenic Hormone in Women.—Durupt shows that the present methods of determination of the estrogenic hormone in blood and urine are based on the phenomenon of Allen and Doisy; namely, the production of estrus in castrated rats. Estrus is ascertained in the vaginal secretion, which reveals the presence of keratinized cells, owing to the desquamation of the uterine mucosa. The smallest quantity of hormone capable of causing the appearance of keratinized cells in the vaginal fluid of the castrated rat represents a rat unit of the estrogenic substance. The technic appears simple but in reality is complex and inexact. Since the response of different races of rats differs, it is essential to use one identical race stabilized by consanguinity. Individual sensitivity of the animals plays a part. This is influenced by the time of castration, by the food and so on. Reading the results of the Allen-Doisy test and the method of extraction are further sources of error. In his investigations the author employed instead of the inexact rat or mouse units the international unit, the weight of which corresponds to 0.1 microgram. As test animal he uses the impuberal mouse as is done in the Doisy-Curtis test. He found that the test of Doisy and Curtis is as sensitive as the Allen-Doisy test that is made on castrated mice and five times more sensitive than that made on castrated rats. It appears with aqueous solutions in three daily injections of 0.5 cc. containing 0.17 microgram of estrogen and with oily solutions of 0.25 cc. injected at once and containing 0.25 microgram. The test is done by simply opening the vagina. The presence of oozing with whatever cellular desquamation exceeds the threshold of reaction. To compare the results obtained with the test of Doisy and Curtis with those recorded in the author's table it is necessary that the condition under which the determinations are made are similar to those adopted by him, that is to say, employing aqueous solutions, three equal injections at twenty-four hour intervals with a quantity of 0.5 cc. each and with an oily solvent employing 0.25 cc. and only a single injection.

Diagnostic Value of Capillaroscopy in Pregnancy.—Following a review of the literature on the condition of the capillaries during pregnancy and puerperal sepsis, Melbard reports his studies comprising 358 examinations, of which 118 were made on sixty-seven pregnant women between the second and ninth months. Of these, thirty-four were examined also during the puerperal period, which took a normal course. The 240 other examinations were made on patients with puerperal complications. Some of these were under observation for three months, the majority for from one and a half to two months. During this time they were subjected to capillaroscopy up to nine times. In summarizing, the author says an augmentation

of the capillaries can be found in two thirds of all pregnant women. It may be clearly visible from the second month of the pregnancy and may persist until delivery. The augmentation of the number of capillary loops became visible in 16 per cent of the cases examined by the author. The morphology of the capillaries is influenced by the sympathetic nervous system, by the endocrine system and by the products of the increased metabolism which is characteristic of the organism during pregnancy. However, it is necessary to take into consideration also diseases of the heart, of the kidneys, sclerotic processes and so on. In puerperal sepsis the capillary alterations are not merely of a functional character but in the majority of cases are of an anatomic nature. These anatomic alterations of the capillary system may be designated as peripheral endarteritis. In the grave septic puerperal complications the capillaries often remain dilated until general improvement of the patient occurs. The morphology as well as the functional aspects of the capillaries have considerable diagnostic and prognostic value in pregnancy as well as in puerperal sepsis.

Journal de Médecine de Lyon

19: 171-210 (March 20) 1938

Ocular Complications of Mumps. M. P. Bonnet.—p. 171.

Uveoparotitis (Syndrome of Heerfordt): Its Relations with Disease of Besnier-Boeck-Schaumann. P. Bonnet and L. Paufique.—p. 183.

*Ocular Manifestations of Malignant Endocarditis with Slow Evolution. P. Bonnet and G. Bonamour.—p. 191.

Ocular Manifestations of Malignant Endocarditis.—Bonnet and Bonamour say that malignant endocarditis with slow evolution, appearing as a primary septicemia grafted on old valvular lesions, can manifest itself in exceptional cases by a sudden dramatic visual disturbance, a unilateral amaurosis caused by embolism of the central artery of the retina. In the evolution of malignant endocarditis, when attention is not called to the eye by any functional trouble, the systematic examination of the fundus reveals in 40 per cent of the cases retinal changes of great value for the diagnosis of the disease. The retinitis of Roth—hemorrhages with white centers, roundish or oval, of navicular form, clearly outlined, and white spots without hemorrhage—seemingly represent the most characteristic change in the chronic form of malignant endocarditis with slow evolution. These hemorrhages appear rapidly in several hours, becoming obliterated and reappearing in other places. These are probably the foci of necrosis limited to the retina at the level of the microbic colonies disseminated by the blood stream in the layer of the nervous fibers. More massive hemorrhages with white central foci may also be observed in front of the vessels in a diffuse edematous process of the retina. It is not exceptional to observe forms which by their association with the changes in the uveal tract and their inflammatory character permit septic retinitis to be considered as an attenuated form of metastatic ophthalmia. The observation of retinal changes remains, although less than was formerly asserted by Litten, a sign of an unfavorable prognosis, quite often the indication of an early fatal outcome.

Presse Médicale, Paris

46: 505-528 (April 2) 1938

Law of Stokes in Venous Pathology. C. Laubry and J. Louvel.—p. 505.
Accidents of Sensory and Motor Nerves Developing in Course of Treatment by Emetine Hydrochloride. P. Hillemand, A. Pichet and J. Charlot.—p. 507.

*Histamine as Chemical Transmitter. A. Gajdos.—p. 509.

Histamine as Chemical Transmitter.—Gajdos says that among the numerous physiopathologic problems raised by the research on histamine there are two which are of especial practical interest: the analgesic action of this substance and its role in the hyperergic diseases. The author reviews the observations of other investigators on the action of histamine and cites his own studies. He arrives at the conclusion that histamine can be considered as a specific chemical intermediary between the variability of causes and the identity of the reactions of the organism. Thus histamine constitutes one of those substances the introduction of which into a morbid process, between the cause and the effect, gives to the pathogenesis a new orientation which can perhaps be compared with the notion of chemical transmitters in normal physiology; namely, with epinephrine as the transmitter of sympathetic excitation and with choline as transmitter of parasympathetic excitation.

Ginecologia, Turin

4: 49-126 (Feb.) 1938

- *Pathogenesis and Therapy of Anemia in Pregnancy: Especial Reference to Role and Effect of Feeding. T. M. Caffaratto.—p. 49.
- Efficacy of Parenteral Administration of Some Hemopoietic Substances in Prevention of Hypochromic Anemia in Pregnancy. T. M. Caffaratto.—p. 101.
- Existence of Substance which Stimulates Permeability of Tissues (R Factor) in Placenta, Amniotic Fluid, Blood of Mother and Fetus and Urine of Pregnant Women. G. Lucchetti.—p. 110.

Hypochromic Anemia in Pregnancy.—Caffaratto states that the number of erythrocytes and the amount of hemoglobin are diminished in normal pregnancy, especially during the last months. When the changes of the crisis of the blood are slight, they constitute a simple form of physiologic hydremic anemia which may evolve to hypochromic anemia. Hypochromic anemia in pregnancy originates mainly in the following factors: the derivation of iron from the body by the fetus, hypochlorhydria (in grave cases), a deficient supply of iron in food and an increased elimination of iron through the feces and urine. Common hypochromic anemia in pregnancy is more frequent in women who are in moderate economic circumstances than in those of better living conditions. Administration of small doses of iron with the ordinary diet or a diet which contains a sufficient quantity of iron to supply the patient with a daily amount of about 0.04 Gm. is of value in preventing hypochromic anemia. The preventive treatment should be administered from the fourth month of pregnancy up to its completion. In hypochromic anemia it is advisable to give iron in large doses and a diet rich in iron but well balanced in proteins, fats and carbohydrates. The following daily doses of iron are in general use: from 2 to 10 Gm. of reduced iron, 1 to 3 Gm. of iron sulfate, 6 Gm. of iron and ammonium citrate, 2 to 3 Gm. of iron protoxalate or 0.6 to 1.6 Gm. of iron hydrochloride. A diet with predominance of proteins over carbohydrates and fats lowers the amount of hemoglobin, which remains unchanged when fats are in predominance and increases when carbohydrates predominate. The variations for assimilation of iron from food depend on the quality of iron and on the individual capacity of absorption. Iron contained in carbohydrates is more easily assimilated than that of fats and proteins.

Haematologica Archivio, Pavia

19: 75-169 (No. 2) 1938

- Anatomic Considerations on Tuberculosis of Spleen with Especial Reference to Tuberculous Splenomegaly. C. Fittipaldi.—p. 75.
- *New Conception of Morphology of Erythrocytes and of Structure of Blood. G. Triolo.—p. 111.
- Hyperplastic Follicular Lymphopathy. A. Fieschi.—p. 145.

Morphology of Erythrocytes and Structure of Blood.—Triolo studied the blood in the blood vessels in the mesentery of guinea pigs and also in emulsions of beef fat in oil of almonds, lipoids, liquids of fixation and bile. In all cases he found that erythrocytes are spheres entirely filled with plasma which roll through the blood vessels in close contact. They modify their form in passing through the capillaries but regain it as soon as they have passed. Plasma in the free state does not exist in the vessels unless there are discoid or bell-like erythrocytes, which shows that discoid and bell-like erythrocytes are altered erythrocytes which eliminate plasma. Coagulation takes place by elimination of plasma by trauma on the erythrocytes. The separation of blood into blood serum and clot can be prevented for more than three months when trauma, during the process of collecting blood, is prevented.

Riforma Medica, Naples

54: 331-368 (March 5) 1938

- Transient Alkaptonuria: Clinical Study. F. Schiappoli.—p. 331.
- *Ucko's Test for Function of Liver in Diseases of the Skin. M. Bronzini.—p. 337.
- Action of Staphylococci Anatoxin Applied Locally on Infected Wounds and Inflammatory Foci. C. Tangari.—p. 343.

Ucko's Liver Function Test in Diseases of the Skin.—Bronzini states that there is a relation between dysfunction of the liver and disease of the skin, especially eczema. The author describes the clinical picture of migration, congestion, acute yellow atrophy, suppuration, cirrhosis, cancer, echinococcosis and syphilis of the liver and discusses the diagnostic value of

certain tests for function of the liver with especial reference to Ucko's test. The technic of Ucko's test has been described in the literature and recently in an abstract in THE JOURNAL (April 9, p. 1238). He obtained positive results of Ucko's test for function of the liver in thirty-two of 100 patients with various clinical forms of eczema. The more serious the cutaneous disease the more intense the results of the test. A treatment administered with the aim of controlling the disturbance of the liver induced great improvement or complete recovery of eczema in the cases reported by the author. He shows the advisability of performing Ucko's test in eczema and of administering a treatment in accordance with the results of the test.

54: 369-408 (March 12) 1938

- Intradermal Staphylococci Vaccine in Therapy of Herpes Zoster. A. Versari.—p. 371.
- Rare Case of Acute Scurvy. G. Giancola.—p. 379.
- *Method for Rapid Lowering of Azotemia of Mean Intensity. M. Pompili.—p. 385.

Method for Rapid Lowering of Azotemia.—Pompili emphasizes the diagnostic and prognostic significance of azotemia in the course of surgical diseases of the urinary tract. The method described by the author consists in the administration of a low protein diet with abstinence from meat and eggs but liberal amounts of greens and fruit, raw liver and small quantities of milk and diuretic beverages. If tests show dysfunction of the liver, it is advisable to give intramuscular injections of from 0.1 to 0.2 Gm. of liver extract in solution or intravenous injections of sodium dehydrocholate. The patient receives also 10 or 15 units daily of insulin, which is given fifteen minutes after administration of a 50 per cent dextrose solution by mouth. The solution of dextrose contains 2 Gm. of dextrose for each unit of insulin that the patient takes. The patient also receives, each morning, 100 cc. of water or milk in which two tablets of a preparation containing magnesium fluoride, iodide, bromide and chloride are dissolved. The treatment is administered for four or five days during which hyperazotemia is lowered to less than half the previous value. The treatment is then discontinued and a few days are allowed to elapse during which time azotemia continues to decline. During this time surgical interventions, especially on the urinary tract, can be performed with a better prognosis than before the treatment when azotemia was present. The author does not give detailed doses for the treatment.

Rivista di Patologia e Clin. d. Tuberculosis, Bologna

12: 145-224 (March 31) 1938

- Osteoplastic Pneumonopathy. C. Manzini.—p. 145.
- *Lipasic Power in Pulmonary Tuberculosis. G. Costantini and G. Tosi.—p. 179.
- *Hydrochloric Gastric Secretion in Tuberculosis in Relation to Sympathetic Nervous System. A. Iraci.—p. 187.
- Spontaneous Healing of Tuberculous Cavities of Lung. D. d'Arcangelo and C. Mazzini.—p. 193.

Lipasic Power in Pulmonary Tuberculosis.—Costantini and Tosi discuss the subject of relation between lipases and pulmonary tuberculosis. According to them, the tubercle bacillus induces a general organic reaction with consequent production of lipases and proteolytic enzymes. The authors review the literature and find that the immunity or increased resistance of certain animals to tuberculosis depends on the intensity of the lipolytic power of the blood or of certain tissues. The importance of the presence of lipases in the blood, the lymph or certain tissues as lysing agents of tubercle bacilli is obvious. The normal lung has a lipolytic ferment the amount of which diminishes in pulmonary tuberculosis. The amount of lipases and the lipolytic power of the blood are diminished in tuberculosis with increasing or diminishing oscillations which are related to the improvement or aggravation of the disease. The mechanism of the lipolytic phenomenon of tubercle bacilli is not clear. The actual aim in controlling pulmonary tuberculosis is to stimulate the body to the production of new enzymes, especially those which may have a direct action on the capsule. The administration of fats with the diet failed. The authors succeeded in increasing the lipolytic power of the blood of rabbits by administering beeswax to the animals.

Hydrochloric Acid in Tuberculosis.—Iraci determined the gastric secretion of hydrochloric acid in twenty-five patients suffering from tuberculosis. He concludes that hyperchlor-

hydria or hypochlorhydria depend on the prevalence of a vagal or sympathetic innervation. The tuberculous toxins do not have a direct action on the gastric secretion. They aggravate, however, the condition of latent rupture of the vagosympathetic equilibrium that exists in pulmonary tuberculosis. The disease develops more frequently in patients with constitutional predominance of the sympathetic innervation than in those with a predominance of the vagal innervation. In the advanced stages of pulmonary tuberculosis the sympathetic innervation predominates over the vagal and there is hypochlorhydria. In disturbances of the gastric secretion in patients suffering from pulmonary tuberculosis it is advisable to give a combined treatment in order to control the changes of the gastric secretion and also of the sympathetic nervous system.

Klinische Wochenschrift, Berlin

17: 329-368 (March 5) 1938. Partial Index

- Surface Tension in Serum and Plasma of Pulmonary Tuberculosis. F. E. Schmiegler and H. Ferenbach.—p. 333.
*Modification of Islands of Langerhans Through the Vagus, by Means of Vitamins B₁ and C. J. Mosonyi and Z. Aszódi.—p. 337.
Treatment of Spastic Conditions of Hollow Organs. E. Lux.—p. 346.
Antiperistalsis in Stenoses of Esophagus. M. Dahm.—p. 347.
Protein Reaction (Triboulet's) in Feces and Its Significance. A. van Meeteren.—p. 350.

Islands of Langerhans and Vitamins B₁ and C.—Mosonyi and Aszódi cite earlier animal experiments in which they were able to show that the intravenous administration of vitamins B₁ and C leads to a greater secretion of insulin into the blood stream of dogs. The vagotropic action of the two vitamins has an important part. The results of animal experiments induced the authors to try the treatment in human subjects with and without diabetes mellitus. They found that in healthy subjects the intravenous administration of vitamins B₁ and C results in the secretion of larger quantities of insulin and in a reduction in the blood sugar. The same effects could be obtained in the majority of patients with diabetes mellitus. By the prolonged, partly parenteral and partly oral administration of both vitamins (B₁ and C) it was possible to produce a considerable increase in the tolerance for carbohydrates, and insulin could often, at least temporarily, be dispensed with in diabetic patients.

Medizinische Klinik, Berlin

34: 245-280 (Feb. 25) 1938. Partial Index

- Acute Articular Rheumatism During Childhood. F. Thoenes.—p. 245.
Experiences with Gold Therapy (Solganal B. Oleosum) in Chronic Arthritis. F. Gröglér.—p. 248.
Treatment of Rheumatic Disease by Histamine Iontophoresis. S. Irle.—p. 252.
Nature and Treatment of Whooping Cough. W. Keller.—p. 253.
*Failures of Vitamin C Therapy. G. Walther.—p. 260.
*Influence of L-Ascorbic Acid (Vitamin C) on Diabetes Mellitus. M. Oshima, T. Terashima and Y. Matsutani.—p. 262.

Failures of Vitamin C Therapy.—Walther reports cases of hemorrhagic diathesis in which treatment with vitamin C was without effect. In three cases of progressive thrombopenia, large doses of vitamin C failed to arrest the disorder. The author thinks that in the first of these cases a deficient resorption in the oral administration of the vitamin was the cause of the failure and that irreparable damage to the hemopoietic system was responsible in the other two. In four patients with hematuria resulting from hemophilia and glomerular nephritis, respectively, daily intravenous injections of from 100 to 500 mg. of vitamin C, for a period of from six to fourteen days remained ineffective. In three cases of essential thrombopenia the vitamin C therapy not only failed but a further reduction of thrombocytes also was observed in two of these patients. In one of them the number of thrombocytes increased again when the daily intravenous injections of vitamin C were discontinued. In one patient mild bronchopneumonia developed during prolonged parenteral vitamin C therapy. The question is discussed whether this patient had a hypersensitivity to cevitic acid or whether there was a relative deficiency of the epithelial protective vitamin A as a result of excessive dosage of vitamin C.

Influence of Cevitic Acid on Diabetes Mellitus.—Oshima and his associates studied the influence of cevitic acid on the sugar content of the blood and urine in normal

persons and in patients with diabetes mellitus. They found that in healthy subjects the intravenous injection of 300 mg. of cevitic acid did not influence the blood sugar curve. In diabetic patients, however, the injection of 300 mg. of cevitic acid produced nearly always a reduction of the sugar content of blood and urine. The authors report four cases of diabetic mellitus in which they resorted to treatment with cevitic acid. In one of them the blood sugar was comparatively low and the urine was free from sugar. In this mild case of diabetes the effect of the cevitic acid was not so noticeable as in the other cases.

Zentralblatt für Gynäkologie, Leipzig

62: 513-560 (March 5) 1938

- *Experiences with Implantation of Ureters into Rectum According to Coffey-Mayo. L. Nürnberger.—p. 515.
Compression of Ureters by External Endometriosis: Case. H. Hauser.—p. 520.
Permanent Result of Göbell-Stoeckel's Plastic Operation of Pyramidal Fascia in Urinary Incontinence. W. Lindemann.—p. 525.
Lethal Urinary Phlegmon Resulting from Injury of Ureter by Crushing of Ureteral Calculus in Course of Forceps Delivery. K. W. Kramer.—p. 526.
Treatment of Complicated Vesicovaginal Fistulas. L. Milew.—p. 528.
*Diagnostic Value of Cystography in Placenta Praevia. K. Jabłoński and E. Meisels.—p. 532.

Implantation of Ureters into Rectum.—Nürnberger describes the histories of two cases of vesicovaginal fistulas in which he resorted to implantation of the ureters into the rectum according to the Coffey-Mayo method. Both patients died. Discussing these cases, the author directs attention to animal experiment by Reimers and to clinical observations made by Mikulicz-Radecki and Krauspe, which indicate that the implantation of the ureters into the rectum not only is likely to aggravate an existing infection but may also prepare the way for new ascending infections of the urinary tract. He concludes that operations for vesicovaginal fistulas always involve risks, which are especially great in the rectal implantation of the ureters.

Diagnostic Value of Cystography in Placenta Praevia.—Jabłoński and Meisels report observations with the cystographic method which Ude and Urner recommended for the diagnosis of placenta praevia. The method is suited especially for the cases in which the fetus is in the vertex position. Ude and Urner maintained that the distance between the lower outline of the fetal cranium and the contrast shadow of the bladder measures normally at the most 1 cm. and that this distance is taken up by the thickness of the wall of the urinary bladder, of the uterine wall and of the fetal scalp. Jabłoński and Meisels, however, assert that the distance is dependent on the following factors: (1) the degree of dilatation of the lower uterine segment and the lifting of the bladder connected with this and (2) the lowering of the fetal head. This explains why, between the seventh and tenth months of pregnancy, the distance becomes constantly smaller so that during the last weeks of pregnancy the outline of the head almost touches the shadow of the bladder. However, if a body is interposed between the fetal head and the uterine wall, such as for instance the placenta or a myoma, the distance is in excess of 1 cm. The cystography is done in the following manner: After evacuation of the bladder by means of a catheter, 40 cc. of contrast fluid (a 12.5 per cent solution of sodium iodide or another contrast substance) is introduced into the bladder. After withdrawal of the catheter, a ventrodorsal roentgenoscopy is made, with the patient in the reclining position and the central ray directed toward the rim of the symphysis. The authors made this test on thirty pregnant women. In sixteen of them hemorrhages had occurred during the second half of pregnancy and the other fourteen cases served as controls. They found that this roentgenologic method permits the detection or exclusion of the placenta praevia if it is of the central or lateral type. A placenta praevia marginalis, particularly if located on the posterior uterine wall, usually cannot be determined by means of this method. Another disadvantage is that the method can be used only if the fetus is in the vertex position. However, the authors suggest that, in some cases of oblique, transverse or pelvic position, external version into the vertex position can be tried. They succeeded in accomplishing this in three cases.

Vestnik Khirurgii, Leningrad

53:111-198 (No. 140) 1937. Partial Index

- Bactericidal Action of Oligodynamic Solutions of Heavy Metals Irradiated with Ultraviolet Rays. N. N. Mishchuk and S. E. Gotman.—p. 116.
 Method of Demonstrating Erythrocytes of Transfused Homogenous Blood in Man. N. S. Voronov.—p. 120.
 Experimental and Clinical Contributions to Question of Alcohol Therapy of Traumatic Shock. G. D. Obratsov.—p. 123.
 Tuberculosis of Thyroid. A. I. Sorkina and P. Ya. Esau.—p. 130.
 Simultaneous Profuse Hemorrhage and Perforation of Gastroduodenal Ulcer. M. T. Fridman.—p. 134.
 *Immediate and Late Results of Resection for Gastric Cancer. A. S. Fedoreev.—p. 139.

Results of Gastric Resection for Cancer.—Fedoreev states that, of the patients admitted to the Leningrad Onkological Institute during a period of six years because of cancer, 49 per cent were incurable, while in the succeeding four years the percentage of incurable cases amounted to 31. The total operability of the gastric cancer amounted to 9.6 per cent for the first five years and to 12.2 per cent in the succeeding five years. Operability among patients first studied in the dispensary gave an average of 27.7 per cent and that of the last four years 31.5. The incidence of gastric cancer in women was one tenth that of the incidence in men. Gastric cancer in young persons is particularly malignant and the late results are almost always unfavorable. The fact that the tumor may be palpated does not necessarily exclude its operability. In 66 per cent of 414 resections the tumor was palpable. Stricter operative indications, improvement in technic and careful preparation of the stomach through lavage with dilute hydrochloric acid solution brought about considerable improvement in the results and lowered the mortality for uncomplicated resections from 40 to 16 per cent. Further improvement in the immediate results is to be looked for principally along lines of limiting the operative indications by a medical staff with a sufficient clinical and technical experience. The author would particularly limit the indications for the so-called extensive resections involving some of the neighboring organs, since half of these patients do not survive the operation while the remainder succumb to recurrences within the first two years and but rarely survive three years. Resection of the stomach with a segment of the transverse colon gives an immediate mortality of 70 per cent, while those who survive live from one to two years. A five year survival is quite exceptional. This operation therefore is indicated in exceptional cases in which the neoplasm is sharply delimited. In such operations it is obligatory to bring out the end of the afferent loop of the colon in the form of an artificial anus or to bring out both ends and later perform an ilcosigmoidostomy.

Norsk Magasin for Lægevidenskapen, Oslo

99:241-352 (March) 1938

- *Alcohol Determinations in Legal Necropsies. G. Guldberg.—p. 241.
 Multiple Hemangiomas in Intestinal Tract: Case. P. Amundsen.—p. 278.
 Translumination as Aid in Roentgen Examination of Joints. A. Scheel.—p. 281.
 *Thrombo-Embolism and Mortality Rate in Operations for Hernia. H. F. Harbitz.—p. 287.
 *Remarks on Clinical Observations in Frontal Intracranial Tumors. A. Torkildsen.—p. 310.
 Pancreatic Cyst: Case. A. Arnesen.—p. 326.

Alcohol Determinations in Necropsies.—Guldberg performed forty-nine legal necropsies in which determinations of alcohol were made and illustrates by examples from these cases how the tests may check and supplement the results of necropsy and other evidence produced. In four of seven cases the alcohol concentration in the stomach was found to differ from that in the blood and urine. He considers the possibility of a diffusion of alcohol from the stomach into the immediate neighborhood and points out that too high values may be obtained in specimens of blood from the heart; he advises taking blood for alcohol determinations in legal cases from places remote from the stomach. In one case the test was successfully made in the blood eleven days after death, in another in the urine seven weeks after death.

Mortality Rate in Operations for Hernia.—Harbitz's material comprises 1,046 cases of hernia in which operations were performed from 1926 to 1935. The interest centers in

the 836 cases of persons over the age of 20, 705 of whom had nonincarcerated hernias (550 inguinal, forty-seven femoral, 108 umbilical hernias, hernias of the linea alba and ventral hernias) and 131 incarcerated hernias (fifty-two inguinal, forty-nine femoral, thirty umbilical hernias, hernias of the linea alba and ventral hernias). Thrombo-embolism occurred in fourteen cases (2.8 per cent) of the nonincarcerated hernias, with a mortality of 0.14 per cent; one patient died from postoperative pneumonia and the total mortality was 0.28 per cent. In the incarcerated hernias, thrombo-embolism was seen in four cases (3 per cent), with a mortality of 0.77 per cent; there were twenty-one deaths from ileus and the total mortality was 16 per cent. Thrombo-embolism occurred in 2.87 per cent of all patients over 20. No appreciable difference appeared between the sexes, and the side operated on apparently had no significance. Nonincarcerated inguinal hernias were relatively frequent in patients of lower age. The author finds that complications of embolic kind seem especially likely to appear in femoral hernias as compared with the other two groups studied. The total frequency of thrombo-embolism in femoral hernias was 8.3 per cent, the frequency in nonincarcerated femoral hernias 10.6 per cent and, in the incarcerated, 6 per cent. More than half of the femoral hernias operated on were incarcerated and the mortality in these was 19.1 per cent.

Frontal Intracranial Tumors.—In the *Norsk Magasin for Lægevidenskapen* 99:137 (Feb.) 1938 Torkildsen reviewed data concerning 353 cases of intracranial tumor, including 154 verified cases. He now analyzes the thirty-one verified cases of tumor of the frontal lobe from this material (eighteen gliomas, six meningiomas, two abscesses, one cholesteatoma and four cases in which the expansive lesion was verified on pneumography but not classified) in eighteen men and thirteen women; all but three were over 20 years of age. The most important symptoms are discussed and all symptoms which appeared as the first three symptoms are tabulated in their chronologic order, with their duration. The most important symptoms were headaches, epilepsy, nausea and vomiting, together with loss of vision, usually a late symptom. Twenty-two patients had mental symptoms, of which dulness was the most common; these symptoms were more frequent in cases of tumor on the left side than on the right. Choked disk was seen in twenty-four cases. It appeared in all cases with vomiting and nausea, in sixteen of the eighteen cases with headache and in nine of the fourteen cases with epilepsy. There was paralysis of the facialis muscle in eighteen cases. Derangement in the sensory system appeared in six cases, in the motor system in twelve, and in two cases with homolateral hemiplegia. Examination of the spinal fluid in nineteen cases revealed definitely increased cell count in only one instance.

Ugeskrift for Læger, Copenhagen

100:243-274 (March 10) 1938

- Grave Anemia in Chronic Acetanilid Intoxication (Cephatyl Tablets). E. Meulengracht and J. T. Hansen.—p. 243.
 "Pseudo-Uremia" in Patients with Hypertrophy of Prostate: Nephrogenic Acidosis. V. Aalkjær.—p. 245.
 Vitamin K in Human Pathology: Preliminary Report. H. Dam and J. Glavind.—p. 248.
 *Paroxysmal Heart Block in Young Person. W. T. Andersen.—p. 250.

Paroxysmal Heart Block.—The complete atrioventricular heart block in a man aged 20 disappeared after two days' treatment with atropine. The history excluded trauma or medicinal cause. During the six days preceding the attack the patient had had increasing pain in the epigastrium and nausea, which is ascribed to an acute disorder at the cardia (esophagitis, gastritis?). Andersen considers the case one of neurogenic reflex block. He cites a case with attacks of heart block (Weiss and Ferris) believed to have been caused in a reflex way through the vagus, and another of neurogenic block (Flauma and Klima) reflected through the superior laryngeal nerve and refers to Gilchrist, who asserts that he has seen eight cases of neurogenic block. The author says that digitalis block may perhaps have a similar origin. The attacks are successfully treated with atropine, epinephrine or ephedrine. The possibility of the disorder ought to be borne in mind. It might occasionally manifest itself in operations in the neck region; preliminary treatment with atropine or ephedrine should hinder its occurrence.

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CASE 5.—In M. S., aged 7 years (adiposogenital dystrophy due to hypothyroidism), the right testis was not felt and the left testis was not felt definitely, although some hypertrophied

tissue below the internal ring was suggestive. The penis was infantile and the scrotum was incompletely formed. This was my first case and as such the treatment was rather irregular and was prolonged over a period of four and one-half years. After six months of treatment with 10,000 rat units of antuitrin-S the right and left testes were felt definitely in the canal. At the end of treatment with 20,000 rat units of antuitrin-S in twelve months and with 37,000 rat units of follutein in fourteen months the right testis was the size of a hazel-nut and resident in the scrotum, and the left testis was of the same size in the lower part of the inguinal canal. The external genitals appeared more matured, the penis was enlarged and the scrotum was formed better. The result of treatment was positive. (Previously reported as case 4.)³

CASE 6.—In R. S., aged 9 years (nonobese, hypothyroid), the left testis was not felt and the right testis was hypoplastic in the scrotum. The scrotum was incompletely formed and the penis was small. The left testis was felt past the internal ring after one and one-half months of treatment with 11,000 rat units. After 37,840 rat units of follutein and 17,000 rat units of A. P. L. in five months, the left testis was the size of a small kidney bean and could be pulled down to the midscrotum; the right testis increased in size, and the penis and scrotum became enlarged and pubic hair appeared. The result was positive.

CASE 7.—In S. R., aged 5½ years (nonobese, hypothyroid), the right testis was not felt and the left testis was hypoplastic in the canal and could be pushed down into the scrotum. After 2,900 rat units of antuitrin-S the right testis was felt past the internal ring. After 7,300 rat units of antuitrin-S and 6,400 rat units of follutein in three months the right testis was brought down low in the canal, the left testis was increased in size and was fixed in the scrotum. The result of treatment was positive.

CASE 8.—In M. B., aged 10½ years (adiposogenital dystrophy due to hypogonadism), the left testis was not felt and the right testis was migratory; the external genitals were hypoplastic. The left testis was felt past the internal ring after 5,800 rat units was given in eighteen days. After 39,700 rat units of follutein and 31,600 rat units of A. P. L. were administered in a period of seven months, the left testis was found to be the size of a shelled hazelnut and could be pushed down to the neck of the scrotum; the right testis was the size of a shelled almond and became fixed in the scrotum; the penis was enlarged and pubic hair was present. The result of treatment was positive.

CASE 9.—In G. A., aged 11½ years (adiposogenital dystrophy due to hypothyroidism), the right testis was not felt; the left testis was hypoplastic in the scrotum. The penis was of fair size; the right portion of the scrotum was undeveloped; suprapubic hair was sparse. The patient received 47,000 rat units of A. P. L., 24,500 rat units of follutein and 7,000 rat units of antophysin, a total of 78,500 rat units in seven months. At the end of that period there was a hypertrophied mass suggestive of the testis past the right internal ring on application of pressure from above. The left testis was increased in size from that of an olive seed to that of a large walnut. The penis became quite matured, and a good crop of suprapubic hair was present. The result of treatment was questionable.

CASE 10.—In S. G., aged 7 years (nonobese, hypothyroid), the right testis was not felt. A scrotal hydrocele with a small testis behind it was found on the left side. The right testis was felt past the internal ring after 9,700 rat units was given in four months. After the administration of 24,900 rat units of antuitrin-S in six months, the apparently absent right testis was definite in the canal while the left scrotal hydrocele became more tense. The result of treatment was positive.

CASE 11.—In R. A., aged 7 years (nonobese, hypogonad [?]), the right testis was not felt. A hydrocele was noted on the right side when the patient coughed. The left testis migrated between the canal and the midscrotum; a hydrocele was also present on the left side. After eleven days of treatment with 1,000 rat units, the hydrocele and testis on the right side descended low in the canal. After 13,500 rat units of follutein in four months, both testes were noted high in the scrotum but were obscured by the tense scrotal hydroceles. Some sparse pubic hair was

present. On examination eight months after discontinuation of treatment the hydroceles were less tense, the testes were stationary in the same position and the precocious suprapubic hair had fallen out. The result of treatment was positive.

CASE 12.—In M. L., aged 8¼ years (adiposogenital dystrophy due to hypothyroidism), the right testis was not defined, although some hypertrophied tissue was palpated at the internal ring. The hypoplastic left testis migrated between the scrotum and the canal. The penis and scrotum were undeveloped. After 1,900 rat units was given in one month, the right testis was felt past the internal ring on application of pressure from above. After 36,300 rat units of follutein and 8,800 rat units of A. P. L. in ten months, two testes of equal size were palpated in the scrotum; the penis and scrotum had enlarged and some pubic hair was present. The result of treatment was positive.

COMMENT

As can be seen from the reports of these cases, prior to treatment one patient showed bilateral intra-abdominal cryptorchidism (case 5); the eleven other patients showed unilateral intra-abdominal cryptorchidism and in addition all showed hypoplasia of the external genitals, usually with hypoplasia of the presenting testicle. The age range of these patients was from 3½ years to 11½ years.

In my experience with these cases of genital maldevelopment, I found that when conditions were such as those in this series, in which no sign of a testicular mass was evident at the outset, one could not know beforehand whether the testicles could be made to descend at all or, if they could be made to descend, how much endocrine therapy would have to be administered before such testicles could be felt on digital palpation.

Examination discloses that the length of time and total dosage for treatment differed in each individual case before any apparent results were attained. Once, however, sufficient and correct amounts had been administered, the apparently absent testicles in most of the cases could be made to respond to treatment. To date descent has been initiated so that they now can be palpated below the internal ring.

While it is true that some patients required only small doses before the testicles could be palpated below the internal ring, I believe that from 4,000 to 5,000 rat units of gonadotropic substance cannot in most cases cause complete descent of testicles. Failure, therefore, for such testicles to appear or to descend after such small doses have been used is not to be considered as conclusive evidence that the cases are nonresponsive to endocrine therapy. I believe, rather, that in such cases, if endocrine therapy was continued in larger doses over more prolonged periods, many such cases would be found to be more responsive to treatment. This can be best demonstrated by case 9, in which 78,500 rat units was required in seven months before a response was evoked.

In the attempt to produce this testicular descent in patients with unilateral intra-abdominal cryptorchidism, not only was this descent provoked in most cases, as can be seen from the case reports, but stimulation of the gonads of the original presenting testicle also inevitably took place. This was evident by the increase in the size of the existing testicle and the development of the external genitals in all cases, regardless of whether or not descent of the intra-abdominal testicle could be provoked. Even in case 1 and case 4, in which no descent of the intra-abdominal testicle could be provoked, and in case 9, in which to date only a mass suggestive of testicular formation can be noted below the internal ring, marked stimulation of the external genitals nevertheless has been induced, although it is

true that this occurred only after the administration of large doses of gonadotropic factor.

I realize that, while the stimulation of the external genitals has been satisfactory in most of my cases, the testicular development is far from complete. The presence of a testicle or testicles in the inguinal canal, the state of testicular development attained to date for most of my patients, is certainly far from the desired objective; nevertheless I feel that, by continuation of proper therapy, descent probably will be further provoked. This assumption is based on the fact that in the treatment of patients who had inguinal cryptorchidism I have found that sufficient treatment administered for this condition will in most cases usually bring down these inguinal testicles and anchor them in the scrotum.

Of course it cannot be overlooked that there are exceptions and that while in most cases inguinal testicles can and probably will be made to descend there are, I have found, some cases of this kind which, when complicated by other developmental anomalies (some apparent prior to treatment, others not), will fail to respond completely to treatment, because complete descent is being impeded. This I have found true in case 11, in which complete descent is being impeded because of the existence of a marked bilateral hydrocele, present before treatment was begun. While it is true that as a consequence of treatment the hydrocele sac in case 11 did descend from the inguinal canal into the scrotum and that the originally absent testicle could be felt behind this hydrocele, nevertheless further treatment did not make the hydrocele disappear entirely. It is true that with the discontinuance of treatment the hydrocele fluid did become somewhat less, and there was some retraction of the tense processus vaginalis; nevertheless, so far (six months later) it has not disappeared. I am therefore now inclined to believe that this condition, when marked, cannot be corrected with endocrine therapy. On the whole, though, such complications are not too frequent and descent does ensue.

In the attempt to correct such conditions of marked hydrocele as existed in case 11, or in the attempt to correct other stubborn case of cryptorchidism, intensive treatment with gonadotropic substance was found to cause in a number of cases precocious production of suprapubic hair. Patient 11, who was $7\frac{1}{2}$ years of age, referred to as showing marked bilateral hydrocele, was given intensive endocrine therapy, and suprapubic hair developed precociously when treatment with 20,000 rat units within a period of ten months was administered. Testicular descent was accomplished only partially when suprapubic hair developed. The production of suprapubic hair occurred also in several other of the younger boys of this series and outside this series. This seems to have been the only apparent adverse effect that developed as a result of intensive treatment. It is significant to note that with the discontinuance of treatment the suprapubic hair in two of the cases subsequently fell out. This was found to take place in case 11 eight months after treatment for intra-abdominal cryptorchidism had been discontinued. In another patient, aged $4\frac{1}{2}$ years, not in this series, precocious pubic hair fell out three months after treatment for inguinal cryptorchidism had been discontinued. This falling out occurred even though the gonads and the external genitals remained in the same state of development as before treatment had been discontinued, with the exception that there was an abatement of the genital congestion. Whether the same

falling out occurred in the other young boys who could not be seen later or whether it will occur in other cases in the future one cannot say, but it is my belief, and it is hoped, that it is not unlikely, since it is certainly to be desired. It can be said, though, that such a falling out does not occur in boys close to puberty.⁴

However, if falling out should not take place, especially in the younger boy, this production of hair, I feel, is objectionable only in that such a growth is not expected before maturity and as such there is the possibility that this might have a psychologic effect on some of the younger boys. In the two cases already mentioned, however, no such effects were apparent.

In any event, the fact that the younger boys are so much better able and so much more likely to respond to endocrine therapy for intra-abdominal cryptorchidism when it is instituted at an early age, and the fact that the institution of this treatment at an early age may, in addition, correct the underlying glandular disturbance, lead me to state that one must risk the possible production of pubic hair and the possible but also questionable psychologic effect which might ensue in some cases. Certainly in view of the promising results attained so far in this series it is not too presumptuous to claim that there is less danger in submitting prepuberal boys to intensive endocrine treatment for intra-abdominal cryptorchidism than to submit these types to multiple operative procedures or to allow them to go untreated. The remote possibility that boys with intra-abdominal testes may respond favorably to endocrine therapy in a comparatively short time without danger of any serious consequences warrants early institution of such treatment without waiting for possible and unlikely spontaneous descent and before attempting surgical intervention which may or may not cause complete descent and which generally does not correct the underlying glandular dyscrasia.

SUMMARY AND CONCLUSIONS

Twelve prepuberal boys, eleven presenting unilateral cryptorchidism and one presenting bilateral cryptorchidism, with ages ranging from 3 years and 4 months to 11 years and 8 months, were treated for cryptorchidism with gonadotropic principle from the urine of pregnant women. Doses in most cases were large and were given intensively over extended periods.

Two of the cases in this study showed no response and therefore their treatment was discontinued. Nine other cases responded definitely as a result of the administration of varying amounts of the substance, so that finally testicles in the inguinal canal were palpated below the internal ring. The twelfth case, while not showing such definite development, did show evidence of response after a very large amount of gonadotropic substance (78,500 rat units) was given over a prolonged period (seven months) so that finally the presence of a mushy mass, suggestive of testicular formation, could be felt below the internal ring.

Several facts may be evolved from this study:

1. The amount of gonadotropic substance and the length of treatment varied; a few patients required comparatively small amounts over a short period; most, however, required much more gonadotropic substance and a longer time.

4. It might be of interest to mention that in the large number of cases of genital underdevelopment which has come within my notice when suprapubic hair was present in quantity in such boys the suprapubic hair was noted frequently to be heterologous in formation. This was also noted in boys closer to puberty in whom suprapubic hair was produced as a result of treatment with gonadotropic substance. I intend to follow up such cases to note whether or not this formation will correct itself as these boys advance in age.

2. When no developmental anomalies existed to impede descent, testicular formation could be initiated and descent into the inguinal canal could be actuated in most cases of intra-abdominal cryptorchidism with varying amounts of gonadotropic substance.

3. Although in the present series of intra-abdominal cryptorchidism complete scrotal descent and fixation is still lacking and testicles have at present reached only the inguinal canal (in case 12 the testicles are in the scrotum), my past experience with cases of inguinal cryptorchidism makes me feel that sufficient additional endocrine therapy in due time will probably produce complete descent and fixation in the scrotum in some of my cases of intra-abdominal cryptorchidism, just as it did in my cases of inguinal cryptorchidism.

4. When impediments such as marked hydrocele accompanied intra-abdominal cryptorchidism and existed before treatment, as in case 11, endocrine therapy could cause the intra-abdominal testicle to descend from the abdomen but it could not correct the hydrocele. (A contrary opinion in a previous communication, to the effect that marked hydrocele could be corrected by treatment with gonadotropic substance, must be held in abeyance until further study is made in other such cases presenting marked hydrocele.)

5. In all the cases of unilateral cryptorchidism in this series, even when descent of the intra-abdominal testicle could not be actuated, the existing hypoplastic gonad and external genitals were developed through the use of gonadotropic substance to the point of apparent normality, and even in some to the point of hypertrophy of the external genitals.

6. The only seemingly adverse effect resultant from intensive treatment was the precocious production of suprapubic hair in some of the younger boys. While this precocious production of hair was not desirable, I found that my patients did not show apparent psychologic effects or any manifestations of a precocious nature.

7. This growth was temporary in one boy aged $7\frac{1}{2}$ years of this series and in one aged $4\frac{1}{2}$ years not of this series; follow-ups show that these precocious pubic hairs had fallen out after treatment had been discontinued for several months. It can be said also that suprapubic hair once produced through treatment in the boys closer to puberty did not fall out.

8. I believe that, even at the possibility of producing precocious suprapubic hair, endocrine therapy should be instituted early in boys showing intra-abdominal cryptorchidism, because the response is much more readily attained and is much more successful in those who are younger than in those boys who are approaching or who have passed the puberal age.

9. Intensive endocrine therapy in all cases of intra-abdominal cryptorchidism should be attempted without waiting for spontaneous descent and before attempting surgical intervention; there is certainly less danger.

ADDENDUM.—Since this manuscript was written the opportunity for a check-up on several of the cases in this series presented itself and the following was noted:

In case 5 a reexamination sixteen months after discontinuation of treatment (at age $12\frac{1}{2}$ years) revealed two firm, good-sized testicles in the scrotum.

In case 11, an operation for bilateral hydrocele was successfully done two months after discontinuation of endocrine treatment. Both testicles were in the scrotum and were of good size and consistency.

In case 12, ten months after discontinuation of treatment, both testicles were still resident in the scrotum.

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TREATMENT OF WOUNDS RESULTING FROM DEEP BURNS

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Deep burns on the average constitute the largest number and, because early adequate help is so frequently lacking, are also the most neglected of all wounds amenable to surgery. Because of this, hospitalization and the wound-dressing period are unnecessarily prolonged and often followed by months, years or possibly a lifetime of discomfort or disability pending a belated surgical repair. This and much to follow is based on a series of 340 late burns treated since 1918 in which the average time that elapsed between injury and inauguration of surgical repair was 5.1 years.¹ The aggregate period of disability in this group from the time of injury until final discharge was 2,312 years, or an average of 6.8 years. These required 1,037 repair operations, with an average treatment and observation period of 17 years per case.

Increased expenditure adds to the economic hardship, which approximates tragedy when it is the earning power of the breadwinner that is at stake, while incidentally an employer may be deprived of needed services, and somebody must pay the too often inadequate compensation specified for industrial accidents by state law.

During the first several weeks after the infliction of the injury it is unnecessary and often impossible to distinguish between partial and full thickness destruction of the skin, but areas of both degrees are commonly present in almost every extensive burn. The primary consideration during this early period, and possibly for months later, is the immediate problem of saving life and of fending the vital organs and nervous balance. The greatest help will come from controlling pain, worry and infection. This most critical time having been successfully bridged, active steps for surgical repair are in order, and, if carried out judiciously in accordance with the needs and condition of the patient, these should from the first facilitate rather than prejudice the earlier objectives enumerated.

To the general practitioner, who as a rule first sees the isolated major burns and who bears the brunt of responsibility during that most trying and difficult period, should be given the credit of a life saved when the patient survives until active surgical repair can be safely undertaken. He is the unsung hero of the catastrophe and for him both respect and admiration are due. However, our observation of the cases cited rather forced the conclusion that opportunities for early repair had not been adequately met in the great majority of instances; this is commonly due to the lack of realization either that what was a burn has changed to a granulating wound or that the closure of this residual wound could be materially hastened by appropriate surgical attention. Either leads to the continuation of a simple dressing treatment long after active surgical repair could very advantageously have been done.

1. Of these, 290 were patients treated in the Plastic Surgery Service in Barnes, St. Louis Children's, and St. Louis Mullamphy hospitals, 17 which are added, through the courtesy of Dr. J. B. Brown, fifty of his own patients treated at the St. Louis Shriners' Hospital for Children.

On the depth of the extensive burn will largely depend the amount of time and the kind of effort to be expended on the repair. In second degree burns, at least, scattered deep-lying islands of epithelium will survive from which rather prompt spontaneous coverage will occur with relatively little deep scarring. In these as in any other cases of destruction of the superficial epithelium, regardless of cause, there is no essential relationship between healing time and size of the defect, and, provided the area remains clean, this kind of healing is not greatly influenced by the type of treatment employed. On the other hand, after total destruction of the skin the manner and course of healing are quite different. Here spontaneous repair is of much later occurrence and is accomplished by three distinct but somewhat overlapping processes: First, the raw surface is gradually covered by granulations; second, the deeper and older layer of these granulations takes on the character of contracting scar, which draws in the surrounding skin and superficial fascia, thus lessening the actual surface area to be repaired; third, after some days, weeks or months, earlier under proper treatment, epithelization of the remaining raw surface starts with a visible ingrowth of the surrounding skin, and perhaps from scattered epithelial remnants. Putting it another way, the spontaneous coverage of a large or of a small second degree burned area, other conditions being equal, will occur in about the same length of time, just as two neighboring grain fields will produce their entire crop simultaneously, regardless of relative size.

However, given two large third degree burns of similar circumstances but of differing size, the healing time, the resulting permanent disfigurement and the disability of each will differ, and the difference will not be in direct proportion to the diameters of the two raw areas but more nearly to the square of these diameters. For instance, as a rather loose estimate, say that a defect 2 inches in its least diameter might require four weeks for complete healing; then the spontaneous healing time for a similar wound from a burn 4 inches in

the type of treatment used. Because of this, the public and many of the profession, partly as a matter of convenience and partly because of inherent virtues, have rather the habit of relying chiefly on the application of some favorite prescription or pharmaceutical and of ascribing the cure of the burn chiefly to its use. Neither this practice nor the inference will be harmful to the patient, provided some of the deeper part of the skin remains everywhere intact. However, when the foregoing or any other plan of expectant treatment is entirely relied on in the care of the less frequently

TABLE 2.—Causes of Burns in This Series

Clothing caught fire: Playing with matches, Christmas tree candles, burning buildings, bonfires.....	65
Gasoline and naphtha explosions.....	33
Fell against hot stove or furnace.....	20
Fell in open fireplace.....	18
Fell in boiling water or spilled hot water or hot coffee.....	17
Kerosene explosion: Starting fires in stoves.....	13
Miscellaneous: gasoline stove polish, 2; powder explosion, 4; hot lard, 2; rope burn, 2; lightning, 1; hot water bottle, 2.....	13
Chemical explosions—acids.....	12
Celluloid combs in hair catching on fire.....	10
Fire from automobile or bus accident.....	9
Electric wires, high voltage, fuse explosion.....	9
Mangle, 7; steam pressure mangle, 1.....	8
Gas and mine explosions.....	8
Fireworks.....	8
Putting end of electric cord in mouth.....	8
Lye.....	7
Burned by facial treatment, 2; electric needle to remove hairs from face, 3; paste for removing growth on face, 1; surgical wet dressing, caught fire, 1.....	7
Cause not given.....	75
	340

occurring large deep burn, the patient is just plain out of luck. We might cite from our series the case of a husky young workman of limited means who had been deeply burned on the thighs and legs some eighteen months previously and had been bedridden or on crutches ever since. According to the statement of the patient and of his family physician, the local treatment had from the first been chiefly the use of a widely advertised and commonly used unguent preparation containing antiseptics and emitting a strong odor, the purchase of which had cost the patient, his family and his relatives to the date of his visit here somewhat more than \$1,200. When he came to us the persisting raw surface seemed still to be about a half or a third the size of the area originally destroyed. We were able to release the contractures, and his wounds healed completely and permanently by three skin-grafting operations, each of which required ten days post-operative treatment, though with necessary preoperative care and an intervening appendectomy his total hospitalization was fifteen weeks.

The preceding comments are not pertinent to tannic acid or any other medication when used to help carry the patient or to add comfort and prevent infection preparatory to a surgical repair when the proper time arrives, but, regardless of their potential usefulness, their use may be susceptible to costly abuse. The application of a chemical or drug in the treatment of a deep burn can at best constitute but one element of a rather intricate surgical procedure. Some of the worst conditions we encounter of late wounds resulting from burns have come from the misuse of a coagulant, usually tannic acid, without proper technic or follow-up. Unless meticulous care is given the wound resulting from a burn, the granulations early become deeply infected, as evidenced by the long persistence of rough corded or

TABLE 1.—Site of Burn in Three Hundred and Forty Cases

	Cases in Gen- eral	One or Both Hands	Head or Neck or Both	Hands and Head or Neck	Arms, Legs, Trunk
	340	59	160	31	88
Average period of observa- tion.....	1.7 yrs.	1.05 yrs.	1.4 yrs.	2.2 yrs.	0.88 yr.
Average age of lesion when first seen.....	3.1 yrs.	3.03 yrs.	7.4 yrs.	4.6 yrs.	4.1 yrs.
Average number of opera- tions.....	3.05	2.0	3.7	5.1	2.2

diameter might be sixteen weeks, while one of a 12 inch diameter might not heal in 144 weeks. Examples of raw surfaces having persisted for from three to thirteen years or more after a burn are not lacking in our series. In contradistinction to the second degree burn, the time at which surgical repair of extensive third degree burns can be advantageously undertaken will in most cases be very largely influenced by the type of local and general care that was administered from the time the burn occurred.

The great majority of surface burns do not quite destroy the full thickness of the skin and, as already pointed out, healing will therefore occur spontaneously in what appears to be a reasonable time, regardless of

ridged keloid scars. With slow spontaneous healing the scar thickens, sometimes enormously, while progressive contraction and occasionally coalescing of opposed raw surfaces cause fixation and distortion, though they do decrease the raw area. Spontaneous epithelization of these maturing scars becomes progressively retarded, and the layer of this new coverage becomes quite thin and unstable, so that even after complete healing it may be repeatedly lost from diffuse hemorrhage into the deeper layers of the scar, from some local or general indisposition of the patient or from any slight trauma. The development of cancer in these old scars has occurred as late as fifty years or more after healing.

Active surgical repair of a deep burn of any considerable size should be initiated as early as practicable in the healing period and aims at permanent skin coverage of all raw surfaces done at one or several operative steps. This may be done completely by using large split grafts, or partially with scattered small grafts that serve as foci from which epithelization spreads in all directions; but either way it should be done with the least possible disturbance to an already sick patient. Usually the patient can be gotten in fair condition before this is attempted, but sometimes very simple types of grafting are done in the hope of giving a step-up to a patient who is making poor headway. The judiciously treated patient is usually easy to handle and has little fear of the dressing; this is more true with children than with adults. There are, however, a few—likely a very few—who will for some time survive the immediate shock and subsequent confusion that follow a large deep burn but will make no proper response to nursing, care of the wound, blood transfusions or skin grafting, and eventually fade out regardless of the care given. Occasionally we have, as a temporary measure, resorted to the use of homografts taken from a parent. Apparently, though we have never seen such grafts persist for more than three weeks, they seem to stimulate a more spontaneous epithelization and may be quite helpful in breaking a vicious circle that threatens to carry off the patient. If the burn were treated by primary excision of the dead tissue, grafting might be done immediately, the patient's general condition permitting, or later when the granulations and the patient become fit. When grafts are applied at this early period to an extensive raw surface no special attempt is made to correct contractions that have already occurred, but a successful take should greatly limit further distortion and enable one to measure the healing period in terms of days rather than of weeks or months or even years.

The chief point in the late correction is the liberation of false union and elimination of binding scars. This can usually be done by excising scar areas down to their deepest elastic layer, immediate application of large split thickness skin grafts, full thickness grafts or a sliding or pedicled flap. There is little to be gained by the attempt to grow skin grafts on a granulating area of years' duration without first removing the granulations and the underlying scar, which latter may be from a fourth to a half inch thick. Much late grief and multiple operations can be avoided by early successful skin coverage. By this procedure we have been able to put a breadwinner back on his job entirely healed within seven weeks after a burn that totally destroyed more than 150 square inches of skin.

In our series of surface burns, regardless of size, the total period of observation was 0.88 year as contrasted to 2.2 years of observation for the complicated structures, namely, hands, face and neck.

Properly handled, children with relatively larger losses are cared for with still greater ease. These early, sometimes makeshift, repairs may not be the final answer in the individual case but at least they will, besides shortening the convalescence, avoiding much suffering and conserving the nervous balance, very much simplify the final restoration and may prevent permanent incurable disabilities. Most important of all is the proper early care and coverage of deep burns of the back of the hand and fingers. Here the tendons and joint capsules lie almost immediately beneath the skin. Few hands that have been allowed to heal spontaneously, having remained uncovered for months or having been allowed to rest in full extension or with the weight of the flexed hand resting on the tips of the fingers, can ever be restored to anything like normal usefulness.

Metropolitan Building.

GONOCOCCIC MENINGITIS

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Twenty-seven cases of meningitis supposedly due to the gonococcus, reported before 1909, have been reviewed by Henderson and Ritchie.¹ Bradford and Kelley² have summarized twenty cases reported since that time and added another which they themselves encountered. Strumia and Kohlhas³ have cited thirty-eight reports. All these authors have pointed out that proof of the identity of the causal organism with the gonococcus has not been offered in all cases and that a few of the diagnoses were made on circumstantial evidence. Most of the reported cases fall roughly into two groups: meningitis in adults accompanying or following gonococcal infection of the genital tract, and meningitis in newborn infants following infection at birth. In an occasional instance the meningitis followed a septicemia without any other apparent focus of gonococcal infection.

The National Institute of Health at Washington, D. C., has for several years past been making a special study of meningococcal infections and has received a large number of cultures taken in such cases for identification and typing. Ten of the 500 cultures received to be typed as meningococci during the past two years have been found to be gonococci. One of these cases is of such unusual interest that a report of it seems definitely indicated. It represents a simple, uncomplicated primary meningitis without any other focus of gonococcal infection and with a history in which there was, so far as could be determined, no known opportunity for infection.

Read before the Society of American Bacteriologists, Washington, D. C., Dec. 29, 1932.

1. Henderson, G., and Ritchie, W. T.: *Gonococcal Meningitis*, *Proc. Neurol. & Psychiat.* 7: 75-87, 1909.

2. Bradford, W. L., and Kelley, H. W.: *Gonococcal Meningitis in a New-Born Infant*, *Am. J. Dis. Child.* 46: 543-549 (Sept.) 1933.

3. Strumia, M. M., and Kohlhas, J. J.: *Gonococcal Meningitis*, *J. Infect. Dis.* 53: 212-218 (Sept.-Oct.) 1933.

REPORT OF CASE

History.—B. M., a white girl, aged 16, well nourished and well developed, felt perfectly well until Sept. 8, 1937, when a headache and a feeling of lassitude and drowsiness developed. The headache became more pronounced and the next day it was accompanied by backache and stiffness of the neck and legs. She vomited once. Her family physician (W. B.) was called September 10, the third day of the illness. At this time she had a temperature of 103 F. (oral) and a pulse rate of 96. There was marked stiffness of the neck, and both the Kernig and the Brudzinski sign were positive. The knee jerks were somewhat exaggerated. Aside from these manifestations the physical examination was negative.

A spinal tap was done and the spinal fluid was found to be very cloudy and under markedly increased pressure. About 45 cc. was withdrawn and 30 cc. of polyvalent antimeningococcus serum was given intraspinally. The patient was then taken to the Gallinger Hospital, where a complete physical examination confirmed the observations of her family physician earlier in the day. The cell count of the spinal fluid was 6,100, with 95 per cent polymorphonuclear leukocytes. The patient was acutely ill but quite rational and cooperative and not especially toxic.

Vaginal smears made on admission were negative for gram-negative cocci.

A cutaneous test revealed a marked sensitivity to horse serum, so it was decided (R. H. M.) not to give more antimeningococcus serum but to treat the patient with sulfanilamide alone. She was given 50 grains (3.2 Gm.) on admission and 20 grains (1.3 Gm.) every four hours for three days, 15 grains (1 Gm.) four times on the fourth day, and 10 grains (0.6 Gm.) four times for the next five days. Beginning with the day after admission (September 11) she was given 30 cc. of an aqueous solution of 1 per cent sulfanilamide intraspinally daily for four days. She received a total of 620 grains (40 Gm.) of sulfanilamide by mouth during eleven days and 105 cc. of 1 per cent sulfanilamide intraspinally during four days.

The temperature was 103 F. on admission and the next day but it then dropped to normal and remained there. The cell counts of the spinal fluid on the first five days of hospitalization were respectively 6,100, 2,000, 1,200, 310 and 170, after which time it was perfectly clear in appearance and pressure was normal. Intracellular gram-negative diplococci were found in the first three samples but in none thereafter. A preliminary diagnosis of meningococcic meningitis was made.

On the ninth day some urticaria and slight swelling of the hands and feet developed. These did not subside immediately after the administration of epinephrine, and there was some question as to whether this rash represented a serum reaction to the one 30 cc. dose of antimeningococcus serum or whether it was due to the sulfanilamide.

Recovery was rapid and uneventful. She sat up the twelfth day after admission to the hospital and was discharged on the sixteenth day (September 26).

The patient was nearly well before the identification of the causal organism as a gonococcus seemed certain. Its similarity to the gonococcus was evident much earlier, but there was nothing in the history to suggest its presence. There was no sign or history of gonococcic infection of any sort; the patient was a virgin and had no history of exposure. There was no gonococcic infection or history of such in her immediate family.

Bacteriologic Study.—Direct smears from the spinal fluid showed gram-negative cocci of typical neisserian morphology both inside and outside of the leukocytes. Cultures were made on rabbit's blood agar plates and in semisolid hormone agar. Growth appeared after forty-eight hours. In the semisolid agar a very delicate pellicle formed and on the blood agar a fine delicate growth of small translucent, discrete colonies occurred, quite characteristic of the gonococcus in appearance. This strain fermented dextrose readily but not maltose or any other sugar tested. It was agglutinated in a dilution of 1:200 in both polyvalent antimeningococcus serum and antigenococcus serum, but not by any of the type antimeningococcus serums. The result of the Thomson alkali solubility test

described by Pelouze⁴ was typical of the gonococcus. The culture and a sample of the patient's serum were sent to Dr. Carpenter at Rochester, N. Y. He found a complement fixation test with the serum for gonococcic infection to be 3 plus and the culture itself to be agglutinated in a dilution of 1:1,280 of antigenococcus serum and only 1:80 in the antimeningococcus serum that he had. There seems every justification for considering the micro-organism in question to be a gonococcus.

Bacteriologic Studies of Other Strains.—During the past two years ten of the cultures that have been sent to the senior author to be typed as meningococci have apparently been gonococci. Five of these were taken from spinal fluid of patients with meningitis, and five were taken from blood. With all ten strains colony formation and type of growth on blood agar were typical, dextrose alone was fermented, and all were agglutinated well by both antimeningococcus and antigenococcus serums, though to varying degrees. Most strains were completely dissolved in the alkali solubility test, whereas others were no more soluble than the meningococci used as controls.

The Source, Fermentation and Serologic Reaction and Alkali Solubility of Fourteen Strains of Gonococci*

Case	Source	Fermentation		Meningococcus						Alkali Solubility
		Dextrose	Maltose	Gonococcus Polyvalent	Polyvalent	Type I	Type II	Type III	Type IV	
1	Sp. fluid	+	—	4442	4420	0000	0000	0000	0000	Complete
2	Sp. fluid	+	—	4220	4321	1000	4432	4310	4420	Complete†
3	Sp. fluid	+	—	3210	2200	1000	2310	0000	0000	Partial†
4	Sp. fluid	+	—	2110	2221	1000	4321	3110	2100	Partial
5	Sp. fluid	+	—	4432	4442	2111	4444	4321	3111	Partial
6	Blood	+	—	4310	4432	4110	4443	4310	4310	Complete†
7	Blood	+	—	3222	3332	3000	4321	2110	2110	Partial
8	Blood	+	—	4321	4443	2100	4432	1110	1110	Partial†
9	Blood	+	—	3322	3333	4320	4433	4310	4300	Partial
10	Blood	+	—	4432	3332	4432	4432	3310	3310	Complete
11	Joint	+	—	3333	3333	3211	4443	3321	3221	Partial†
12	Urethra	+	—	4442	4444	4210	4443	1100	1000	Complete
13	Eye	+	—	3321	3321	1000	0000	0000	0000	Partial
14	Eye	+	—	4432	4444	2100	4332	3310	3311	Partial
15	Meningococcus I	+	+	3210	4414	4444	0000	2100	0000	Partial
16	Meningococcus II	+	+	4420	4444	2100	4443	1100	1000	Partial

* In the columns giving the serologic reactions, 4 indicates complete agglutination, 0 no agglutination, 1, 2 and 3 degrees of agglutination.

† These patients had a definite history of previous gonococcal infection of the genital tract

The most interesting feature was the reaction of these strains with meningococcus typing serums. Three of the five strains from the spinal fluid were agglutinated well by type II serum, though there was some degree of "crossing" with group I-III. Three of the five strains from the blood were also well agglutinated by type II serum, and the other two were agglutinated equally well by types I and II serums.

The question naturally arose How can one be sure that these are gonococci? What is a gonococcus, and what criteria may safely be used for its identification?

Known gonococci for comparative study were sent to us by Dr. Carpenter—two strains from the eye and one strain from the urethra. We obtained another from an arthritic joint. These and our ten blood and spinal fluid strains were studied with regard to type of growth, colony form, fermentation, serologic reaction and alkali solubility. These cultures were found to be indistinguishable from one another. Delicate growth on blood agar and small, translucent convex colonies were alike in all and were distinctly different from the more luxuriant growth of the meningococcus. Dextrose was readily fermented by all, but no other sugar was. All were often agglutinated by polyvalent antimeningococcus serum as well as by antigenococcus serum. Nearly all were agglutinated more strongly by type II antimeningococcus serum than by the other type serums, though there was considerable cross agglutination with some. The strain from the patient whose case

4. Pelouze, P. S.: *Gonorrhea in the Male and Female*, Philadelphia, W. B. Saunders Company, 1931.

is reported here and one strain from the eye in another case were the only two that were not agglutinated by type serums.

In the alkali-solubility test of Thomson described by Pelouze⁴ the gonococcus is usually instantly and completely dissolved, leaving a completely clear solution. Meningococci are partially dissolved but the stroma remains, leaving an opalescent fluid. Micro-organisms such as streptococci and staphylococci are untouched in the dilution of alkali used. The strains that we studied did not behave identically in this test. Five of the thirteen strains were completely and instantly dissolved, a clear, yellowish solution being left. These included two from the spinal fluid, two from the blood and one from the urethra. The eight remaining strains dissolved partially, leaving an opalescent fluid and some stroma, the reactions more nearly approaching those of the meningococci included in the test for comparative purposes.

The accompanying table summarizes the source of these strains, the characteristic fermentations, the serologic reactions and the alkali solubility.

COMMENT

Of 500 cultures sent to us during the last two years to be typed as meningococci, ten (or 2 per cent) have been found to be gonococci; one half of these, or 1 per cent, have been from spinal fluid and the other 1 per cent from blood. A complete detail of the history was not available in some of these cases, but it is definitely known that in five cases (2, 3, 6, 8 and 11) the meningeal or blood stream infection followed gonococcal infection of the genital tract. It is usually assumed that meningitis due to the gonococcus is secondary to gonococcal infection elsewhere. But in two of four patients who were observed by us, there was neither evidence nor history of other gonococcal manifestation obtainable. Both of these patients were young women—one the case described in this paper (case 1) and the other a nurse who had what seemed to be a primary gonococcal septicemia without meningeal involvement (case 7).

How can one be sure that the micro-organism in question is the gonococcus? What tests can be applied that definitely differentiate the gonococcus from the meningococcus?

Certain it is that our ten strains which appeared to be gonococci were indistinguishable in any way from those strains which had been isolated and identified as gonococci by workers who were experienced with that group of bacteria and that they differed in several respects from the many strains of meningococci which have been studied by us. How constant and how dependable are these differences? Cultural features and the type of colony were the most fundamental and typical differences that we have found. The persistently delicate growth and very small translucent colonies of the gonococcus have never been encountered by us with meningococci. The meningococcus is much more luxuriant and the colonies are larger.

Next in importance are the fermentation reactions. It has been well known for a long time that gonococci will ferment dextrose but no other sugars, and those which we have studied have followed this rule without exception. Among the approximately 1,000 strains of meningococci that have passed through our hands during the last ten years only four have seemed to ferment dextrose only, as does the gonococcus. It is possible that these may ultimately ferment maltose also, as other meningococcus strains have been inactive in this respect at first. At the time when a diagnosis is being made this failure of some strains of meningococci to cause characteristic fermentation may occasionally be confusing. Nevertheless, nearly all workers in this

field are agreed that the fermentation reactions are one of the most reliable aids in the identification of the gonococcus.

We have found the alkali solubility test of Thomson to be of definite value, though it is not an absolute criterion. Complete and rapid solution of the culture suspension has invariably indicated a gonococcus, though not all gonococci have given this complete reaction, as shown in the table.

Serologic methods of differentiation have not been satisfactory. Complete fixation with a patient's serum is indicative of infection with some member of the genus *Neisseria* and it is not species specific. Gonococci are well agglutinated by polyvalent antimeningococcus serum and usually by type serums. There is apparently an especially close relationship between gonococci and type II meningococci. This is especially interesting when the epidemiology of these infections is considered. During the last twenty years epidemics and small explosive outbreaks of meningococcal meningitis have been due chiefly to strains of the I-III group, whereas the cases due to type II have been sporadic. There has been a tendency for such cases to be milder and less responsive to treatment with antimeningococcus serum.⁵

CONCLUSIONS

It seems likely that gonococcal meningitis is much more common than it is usually supposed to be. Hospital laboratories are usually much too busy to carry the identification of the causative micro-organism to completion, and a gram-negative coccus of typical morphology which occurs intracellularly and extracellularly in the spinal fluid, and which is agglutinated by antimeningococcus serum, is usually assumed to be a meningococcus. Even when the study is carried further, definite criteria for the identification of the gonococcus are not well established and its identification is not easy. An absolute criterion is lacking. Nevertheless, a careful study of cultures with consideration of all of their characteristics—type of growth, colony form, fermentation reactions, alkali solubility and serologic reactions—will make an experienced worker feel quite sure of the identity of the strain in question.

Although gonococcal meningitis is usually secondary to gonococcal infection elsewhere, the case reported in this paper suggests that the gonococcus must be considered a potential cause of a primary meningitis without other gonococcal involvement.

National Institute of Health.

5. Since this paper was written we have observed three additional cases of gonococcal meningitis and have studied the cultures obtained from them. In all three of these cases there were histories of previous gonorrheal infection. The following additional reports of cases of gonococcal meningitis have appeared in the literature:
Marvin, H. P., and Wilkinson, W. E.: *Gonococcal Meningitis: Results of Treatment with Sulfanilamide*, J. A. M. A. **110**: 800-802 (March 12, 1938).

Steiner, W. R.: *Gonorrheal Meningitis, with Report of a Case and Review of the Literature*, Tr. Am. Clin. & Climat. A., 1937, p. 1.

That Strange Genius, Paracelsus.—Here and there men of science could be found groping through the thick fogs of ignorance, fear and superstition that enshrouded in mystery the phenomena of mental disease. Among the earliest of these was that strange genius, Paracelsus, dabbler in alchemy and astrology, an eccentric and braggart—and a great physician. Before meeting death in a tavern brawl in 1541, Paracelsus had rendered medical science a great service by repudiating galenism and the humoral pathology that had dominated medical practice for more than fifteen centuries. He ridiculed the notion of demoniacal possession.—Deutsch, Albert: *The Mentally Ill in America*, New York, Doubleday, Doran & Co., Inc., 1937, p. 21.

THE "COLD PUNCH" TYPE OF
PROSTATIC RESECTION

SIX YEARS OF PROGRESS

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The principle of removing obstructing prostatic tissue through the urethra by means of a cold, cutting, tubular knife sliding in an outer fenestrated sheath was given its first serious trial in the Young punch.¹ The principle was further carried on in the Braasch "median bar excisor."² For obvious reasons neither instrument was adapted for the removal of substantial amounts of prostatic tissue and neither provided adequate means for hemostasis. The first "cold cutting" resectoscope that overcame these difficulties was the Braasch-Bumpus resectoscope.³

Although a few prostatic resections were done each year for several years previous to 1930, it was not until 1931 that they were done in enough volume at the Mayo Clinic to assume importance. The subsequent

in performing transurethral resection;⁴ important among these is the teaching regarding preoperative preparation. For instance, whereas formerly drainage by catheter for ten days was insisted on almost as a routine in cases in which suprapubic drainage was not immediately established, today drainage by catheter is employed only if nitrogen is retained in the blood. Drainage by catheter is terminated just as quickly as the concentration of blood urea can be reduced to 50 mg. per hundred cubic centimeters or less. For the same reason the incidence of preliminary suprapubic drainage has steadily declined, as is shown by the fact that in 1933 preliminary suprapubic cystostomy was performed on twenty-eight of the 451 patients subjected to transurethral resection, whereas in 1936 it was performed on only eleven of the 749 patients who were subjected to this type of resection.

Another striking observation over this period of six years is the increase in the number of patients of advanced age who were subjected to operation. This can be explained by the fact that there are accepted for transurethral resection patients who present a poorer risk than that presented by patients who formerly were

TABLE 1.—Patients of Various Ages Who Underwent Prostatectomy (Suprapubic and Perineal) from 1925 to 1930 Inclusive and Other Patients of the Same Ages Who Underwent Transurethral Prostatic Resection from 1931 to 1936 Inclusive

	Age Group, Years	1925		1926		1927		1928		1929		1930		Total	Per Cent
		Patients	Per Cent	Patients	Per Cent	Patients	Per Cent	Patients	Per Cent	Patients	Per Cent	Patients	Per Cent		
Prostatectomy	Under 70	201	78.9	197	79.8	206	79.8	221	83.4	207	76.4	183	67.6	1,215	79.5
	70-79	48	18.8	49	19.8	50	19.4	43	16.2	59	21.8	46	19.7	295	19.3
	80-89	6	2.3	1	0.4	2	0.8	1	0.4	5	1.8	4	1.7	19	1.2
	90-99	0	...	0	...	0	...	0	...	0	...	0	...	0	...
	Total	255	100	247	100	258	100	265	100	271	100	233	100	1,529	100
Transurethral resection	Under 70	77	88.5	222	78.7	299	66.2	438	69.6	449	64.6	490	65.4	1,975	68.3
	70-79	10	11.5	56	19.9	137	30.4	176	27.9	208	29.9	218	29.2	805	27.8
	80-89	0	...	4	1.4	14	3.2	16	2.5	37	5.3	40	5.3	111	3.8
	90-99	0	...	0	...	1	0.2	0	...	1	0.2	1	0.1	3	0.1
	Total	87	100	282	100	451	100	630	100	695	100	749	100	2,894	100

rapid rise of this type of surgery has been phenomenal, as is demonstrated by the fact that at the Mayo Clinic in 1931 ninety-nine resections were done on eighty-seven patients, while, in 1936, 835 resections were performed on 749 patients. In 1931 transurethral resection accounted for 40 per cent of the year's prostatic surgery, while in 1936 it accounted for 99.6 per cent of the year's prostatic surgery. For the six years from 1925 to 1930 inclusive, an average of 255 patients a year were subjected to prostatectomy; in 1936, 749 patients were subjected to transurethral resection. This suggests that the fear of prostatic surgical operations is decreasing and patients are seeking earlier relief.

During the period of six years 1931 to 1936 inclusive transurethral surgery had been rapidly improving, and each year the operation was being performed better than in the previous year, owing to improvement in technic and in instruments and to better knowledge of the surgical principles involved. Several axioms of suprapubic and perineal prostatectomy have had to be unlearned

accepted for prostatectomy and that men whose physicians formerly would have advised against their seeking surgical relief because of their advanced age are being referred for operation. Evidence of the increasing number of older patients can be seen in table 1. It will be seen that of patients subjected to prostatectomy 20.5 per cent were 70 years of age or older and only 1.2 per cent were more than 80. Of the patients subjected to transurethral resection, 31.7 per cent were 70 years of age or more, whereas 3.9 per cent were more than 80.

The average period of postoperative confinement in the hospital remains almost constant, year after year, at about eight days. The mortality rate, although it fluctuates from year to year, continues to be low, as is shown in table 2.

Probably the most important recent advance in transurethral prostatic resection is that larger amounts of prostatic tissue than formerly are being removed. When transurethral surgery began, it was thought necessary to cut only a "channel" or "gutter" through the prostatic urethra. This channel soon was found to be inadequate. Later it was felt that, if all the obstructing tissue of the median lobe and the intravesical portions of the lateral lobes were removed, the remaining

From the Section on Urology, the Mayo Clinic.
1. Young, H. H.: A New Procedure (Punch Operation) for Small Prostatic Bars and Contracture of the Prostatic Orifice, *J. A. M. A.* **60**: 253-257 (Jan. 25) 1913.

2. Braasch, W. F.: Median Bar Excisor, *J. A. M. A.* **70**: 758-759 (March 16) 1918.

3. Bumpus, H. C., Jr.: Punch Operation for Prostatic Obstruction, *S. Clin. North America* **7**: 1473-1478 (Dec.) 1927; *Hypertrophy of the Prostate Gland, in: Minor Surgery of the Urinary Tract*, Philadelphia, W. B. Saunders Company, 1932, chapter 4, pp. 41-59.

4. Emmett, J. L.: Changing Conceptions of Indications for Surgical Relief of Prostatic Obstruction, *Am. J. Surg.* **34**: 216-220 (Nov.) 1936.

intra-urethral portions of the lateral lobes would cause no difficulty for the patient. The results with this type of resection were entirely unsatisfactory and the patient continued to suffer with residual urine, dysuria and urinary infection. It soon became evident that all the intravesical tissue, and as much of the intra-urethral tissue as possible, should be removed. Symptoms of

scope⁶ (fig. 1). Embodying the fundamentals of the Braasch-Bumpus resectoscope, it allows also cutting under visual control. Providing a self-contained unit, with the water inlet on the knife and a large outlet valve, it is possible to resect tissue rapidly and accurately. Instead of several steps being required for removal of each piece of tissue, several pieces can be cut rapidly and allowed to fall into the bladder, subsequently to be washed out through the outlet valve or to be aspirated with the evacuating syringe. With the Bugbee electrode always in place, individual bleeding points can be fulgurated instantly as they appear, reducing the loss of blood to a minimum.

Since Sept. 1, 1936, except in a few instances, the Thompson instrument has been used exclusively at the Mayo Clinic with excellent results, and we have found it extremely satisfactory for several reasons. From the surgeon's standpoint it is much easier to use. For instance, if tissue is in an extremely awkward position to be engaged when the scope has once been maneuvered into position, this portion of the prostate gland can be rapidly resected instead of its being necessary repeatedly to maneuver the scope into the difficult position required to engage each piece of tissue. With the increased length of the scope, tissue is more easily engaged, for greater leverage is available (the perineum acting as the fulcrum). This greater leverage reduces the manual strength required, so that the surgeon's arm and fingers do not tire so easily. Because the cutting is done under visual control and the length of the bite can be varied by opening the fenestra to any desired length, it is possible to remove tissue at the apex of

TABLE 2.—Mortality Rate of Transurethral Prostatic Resection for the Six Years from 1931 to 1936 Inclusive

Year	Patients	Resections	Deaths	Mortality Rate	
				Per Cent of Patients	Per Cent of Resections
1931	87	99	5	5.7	5.1
1932	282	321	0	0.0	0.0
1933	451	513	5	1.1	1.0
1934	630	696	2	0.3	0.3
1935	695	765	7	1.0	0.9
1936	749	835	11	1.5	1.3
Total	2,891	3,229	39	1.0	0.9

obstruction recurring in from one to two years were found to be due to the removal of an insufficient amount of tissue at the first operation.

When the procedure is transurethral prostatic resection, we have always felt at the clinic that the patient should not be subjected to a longer period of operation than one hour. If the period of operation is extended, the operative risk becomes unduly high. It is much preferable, when a large prostate gland is encountered, to subject the patient to a second resection from five to ten days after the first than to prolong the operation. With the Braasch-Bumpus resectoscope, because of the

TABLE 3.—Comparison of Weight of Tissue Removed per Resection (Not per Patient)

Transurethral Resections Performed in September—Successive Years														
Weight of Tissue, Gm.	1931		1932		1933		1934		1935		1936		1937	
	Resections	Per Cent of Total	Resections	Per Cent of Total	Resections	Per Cent of Total	Resections	Per Cent of Total	Resections	Per Cent of Total	Resections	Per Cent of Total	Resections	Per Cent of Total
0-10	10	100.0	31	79.5	34	62.0	52	69.4	39	46.4	25	28.8	22	21.0
11-20	..	.....	8	20.5	14	25.9	16	21.3	28	33.4	25	28.8	26	24.0
21-30	..	.....	..	....	5	9.3	4	5.3	14	16.7	14	16.1	10	10.0
31-40	..	.....	..	....	1	1.9	2	2.7	2	2.3	8	9.2	12	12.0
41-50	..	.....	..	....	..	....	1	1.3	0	0.0	0	10.3	11	11.0
51-60	..	.....	..	....	..	....	..	....	1	1.2	3	3.4	5	5.0
61-70	..	.....	..	....	..	....	..	....	..	....	3	3.4	3	3.0
71-80	..	.....	..	....	..	....	..	....	..	....	..	....	2	2.0
Totals	10	100.0	39	100.0	54	100.0	75	100.0	84	100.0	87	100.0	100	100.0

number of technical steps required to remove each bite of tissue, from 30 to 45 Gm. of tissue is about the maximal amount that can usually be removed in from fifty to sixty minutes by an experienced surgeon. Often, in operating on a moderately large prostate gland, this gives a good functional result even though considerable tissue remains. With such a satisfactory functional result the surgeon hardly feels justified in advising, and the patient is loath to accept, a second resection to remove the remaining tissue. A small percentage of the patients will return in two or three years either with further symptoms of obstruction or with aggravating intermittent hematuria attributable to remaining adenomatous tissue that requires further resection. It becomes more and more apparent that to give the most satisfactory results transurethral resection must approach total prostatectomy. "Transurethral prostatectomy" must eventually replace "transurethral prostatic resection."

An important step in this direction has been the introduction of the Thompson "cold cutting" resecto-

scope with much less danger of injuring the external sphincter than would be entailed otherwise. Because of the rapidity with which the instrument can be operated, from 55 to 80 Gm. or more of tissue can be removed easily in a period of from forty-five to sixty minutes. As a result, almost complete prostatectomy is performed in a large percentage of cases.

Also important among the factors promoting more complete removal of tissue is the more liberal use of digital counterpressure in the rectum exerted by an assistant. Especially in the case of a pocketed urethra, this maneuver helps greatly in engaging tissue. If too strenuous attempts are made to engage tissue in such a urethra without counterpressure, the trigon and external sphincter may be considerably traumatized.

The results from the more nearly complete removal of prostatic tissue are gratifying. Delayed postoperative bleeding (which usually arises several months after

5. Thompson, G. J.: A New Direct Vision Resectoscope, Urol. & Cutan. Rev. 30: 545-546 (Aug.) 1935.

operation in remaining remnants of adenomatous tissue) has become extremely uncommon. Convalescence is much smoother and the urinary infection is eradicated with remarkable rapidity; it is not uncommon to see patients from five to seven weeks after resection of a large prostate gland whose urine is crystal clear. Post-operative frequency and nocturia have been much reduced. It recently has become apparent that the

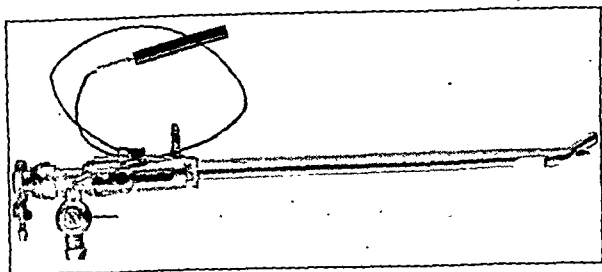


Fig. 1.—Thompson resectoscope.

judicious administration of sulfanilamide for a short period, about six weeks after resection, is exceedingly helpful in clearing the urine. When the cold cutting resectoscope is used, if resection has been completely done, the prostatic urethra is usually clean, well healed and free from bits of sloughing tissue in from four to six weeks following operation. After this period has elapsed, if the urine remains hazy, administration of sulfanilamide, 10 grains (0.65 Gm.) four times a day for from six to nine days, in the great majority of cases will cause the urine to become clear almost immediately. Sulfanilamide given preoperatively or immediately after operation, however, seems to be of little or no value. This statement has been carefully verified here by Gaudin, Zide and Thompson⁶ in a large series of cases with controls.

For the purpose of illustrating the gradual tendency to remove larger amounts of prostatic tissue in transurethral resection, I have compared the work done in September 1937 with that done in each preceding September to and including 1931. There are several reasons for choosing September: It is the most recent month tabulated at the writing of this paper; it marks the completion of one year's almost exclusive use of the Thompson resectoscope, which has allowed time to acquire proficiency in its use. Also, our statistics at the clinic show that in the fall of the year prostate glands seem to be somewhat larger than at other seasons. This is probably explained by the fact that patients who have only large intra-urethral lateral lobes tend to suffer with acute episodes of obstruction at the onset of cold weather. A comparison of the work done in individual months will, I believe, better portray the status of transurethral resection at each definite stage of its development. As will subsequently be brought out in this paper, there is no reason to feel that prostate glands encountered vary in size from year to year.

A comparison of the work done in each September, from 1931 to 1937 inclusive, is interesting. One must remember, in studying the data presented subsequently, that the weight of tissue given is per resection and for that reason does not always indicate the total amount removed from a patient. For instance, the 100 resec-

tions done in September 1937 were performed on ninety-seven patients, signifying that three resections were secondary operations. Table 3 shows the marked increase in the amount of tissue removed per resection from year to year. The gradual increase was, of course, due to the improvement in technic as a result of increased experience. However, it will be noticed that there was a striking increase in the weight of tissue removed in September 1936 and September 1937. For instance, in September 1936 more than 30 Gm. of tissue was removed in 26 per cent of the resections, while in September 1937 more than 30 Gm. was removed in 33 per cent of the resections and more than 60 Gm. was removed in 5 per cent. The average weight of tissue removed per resection in September 1937 was 25.3 Gm.

In table 4 is given the approximate time that was required for resection in various years. It will be seen that in each succeeding year there was a gradual reduction in the operating time per gram of tissue removed. This no doubt was due to the gradual refinement of technic resulting from greater experience. The outstanding reduction in operating time, however, is seen to have been in the September 1937 group of cases. In table 5 this is demonstrated more clearly, as it is seen that in this month 85 per cent of the resections were completed in forty-five minutes or less, in spite of the fact that more than 40 Gm. of tissue was removed in 21 per cent of the cases. This sudden reduction in operating time is largely due to the rapidity with which the Thompson resectoscope can be operated.

The question is often raised as to what proportion of the prostate gland is removed at resection. For the first nine months of 1937 the average weight of tissue removed per patient was 23.6 Gm. From 1912 to 1931 inclusive, prostatectomy (either suprapubic or perineal) was performed at the Mayo Clinic in 3,629 cases. Of these cases we have the record of the weight of the prostatic tissue removed in 3,205, and in this group the average weight of tissue removed was 44.1 Gm. The highest average for any one year of this period was 51.3 Gm.; the lowest, 41.2 Gm. (fig. 2). This comparison, however, is not entirely fair to transurethral resection, for the average weight of tissue in

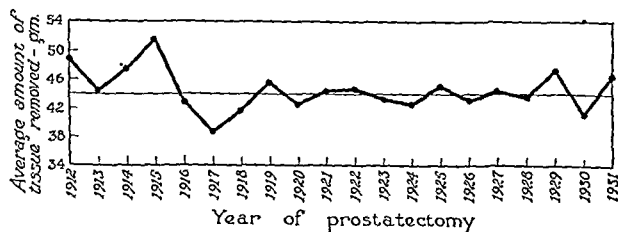


Fig. 2.—Average weight of tissue removed at prostatectomy from 1912 to 1931.

the group of cases in which transurethral resection was performed is considerably lowered by the many cases of median bar and contracture of the vesical neck in which, formerly, the risk of prostatectomy would not have been accepted. We have included every such case in tabulating the results of transurethral resection. If these cases were eliminated the average weight of tissue removed at resection would be materially increased. From these data it must be concluded that considerably more of the gland is being removed at transurethral resection than is generally supposed. As regards the incidence of "large prostates," it is of interest to note

6. Gaudin, H. J.; Zide, H. A., and Thompson, G. J.: Data Concerning Administration of Sulfanilamide Following Transurethral Prostatectomy, unpublished data.

that, of 3,205 prostate glands removed suprapubically or perineally at the Mayo Clinic between 1912 and 1931, only 7.3 per cent weighed more than 100 Gm.

The majority of distressing postoperative complications and accidents discussed in the urologic literature in relation to transurethral resection are rapidly disappearing as the general technic throughout the country improves with increased experience. There is one

TABLE 4.—Comparison of Length of Operative Period

Length of Operative Period, Minutes	Per Cent of Total Transurethral Resections Performed in September—Successive Years						
	1931	1932	1933	1934	1935	1936	1937
30 or less	20	17.9	33.3	38.7	38.1	39.1	53
31-45	60	30.8	33.3	33.3	22.6	24.1	32
46-60	20	35.9	13.0	12.0	14.3	23.0	11
61-75	..	15.4	7.4	10.7	17.8	6.9	4
Over 75	..	..	13.0	5.3	7.2	6.9	..
Total	100	100	100	100	100	100	100

complication, however, that, although it is of rather uncommon occurrence, still presents a problem in transurethral surgery. This is postoperative urethral stricture. It is rather difficult to estimate the incidence of postoperative stricture. Certainly there are cases in which a stricture of large caliber develops but never gives enough trouble to make the patient seek urologic advice. I would estimate that the possible incidence of postoperative urethral stricture at the Mayo Clinic has been from 1 to 1.5 per cent. Most of these strictures are slight and respond to one or two dilations. The majority are found in the anterior urethra, in the region of the penoscrotal angle, and occasionally they may be extremely difficult to dilate. In these cases internal urethrotomy is performed with the Riba⁷ high frequency urethrotome and results are excellent. This procedure carries little if any risk, and in many cases the results seem to be permanent.

It is generally agreed that the cause of these strictures is the passing through the urethra of too large an instrument. If the resectoscope is tight in the urethra the chances of formation of stricture are increased. If too large an instrument is forced through the urethra and the mucosa is torn, the chance of a stricture forming is still greater. For that reason the Braasch-Bumpus instrument is manufactured in two sizes, 24 and 28 F., and the Thompson resectoscope in sizes 27 and 30 F. The one rule that we attempt to follow is never to pass an instrument through the urethra if it is too tight. Nevertheless, in occasional cases strictures will form even when the urethra has been of adequate caliber for the resectoscope. In such cases the stricture is nearly always at the penoscrotal angle and no doubt arises from the trauma induced by motion of the resectoscope back and forth in engaging tissue. It is believed that the incidence of this type of stricture may be somewhat reduced with the new resectoscope, since fewer motions are involved in its use.

Probably the best solution yet devised to prevent postoperative stricture is that of "perineal prostatic resection," as recently described by Thompson⁸ and Cabot.⁹ If this procedure is used in all cases in which

the urethra is too narrow to allow the resectoscope to pass freely, the incidence of postoperative stricture should be reduced to an almost negligible figure. This procedure makes use of the fact that the bulbous urethra is nearly always of large caliber. Over the tip of a sound that has been passed into the bulbous urethra external urethrotomy is performed and the resectoscope is introduced into the bladder through this incision. Following the resection the indwelling catheter is inserted through the penile urethra as usual, and the perineal wound is allowed to close without stitches. The wound is usually healed sufficiently by the fourth day so that leakage does not occur when the patient voids after removal of the catheter.

The results obtained with transurethral surgery of the prostate gland in this period of more than six years have been very satisfactory, and it is felt that it is now the procedure of choice in practically all cases of obstructing prostate glands. With increased experience and improved instruments one might safely predict that transurethral resection will become known in the literature of the future as transurethral prostatectomy.

COMMENT AND SUMMARY

Transurethral resection has dispelled much of the fear of prostatic surgical procedures among laymen. Because of this, a much larger number of patients are seeking surgical relief of prostatic obstruction than in the days when prostatectomy was the sole method employed. A part of this increase is also due to the large proportion of older men who formerly were regarded as offering too poor surgical risks.

The incidence of preliminary suprapubic drainage before resection is rapidly declining and drainage by catheter is employed only in cases in which nitrogen is being retained. The most important advance in resection has been the removal of larger amounts of tissue and reduction in operating time, owing to increased technical experience and improved instru-

TABLE 5.—Per Cent of Resections Completed Within a Forty-Five Minute Operative Period Compared with Weight of Tissue Removed

September	Per Cent of Month's Resections Completed Within a 45 Minute Operative Period	Per Cent of Month's Resections in Which Amount of Tissue Removed Was More Than			
		30 Gm.	40 Gm.	50 Gm.	60 Gm.
1931	80	0	0	0	0
1932	48.7	0	0	0	0
1933	66.6	1.9	0	0	0
1934	84	4.0	1.3	0	0
1935	60.7	3.5	1.2	1.2	0
1936	63.2	26.3	17.1	6.8	3.4
1937	85	33.0	21.0	10.0	5.0

ments. Because of this removal of larger amounts of tissue, convalescence is smoother and results are more satisfactory than before. The judicious use of sulfanilamide several weeks after resection is of distinct value. Postoperative urethral stricture can be reduced to an almost negligible minimum if "perineal prostatic resection" is employed in cases in which the urethra is too tight to admit the resectoscope readily. The statistics comparing the progress of six years suggest that transurethral resection is eventually to become transurethral prostatectomy.

7. Riba, L. W.: Electro-Urethrotomy in the Treatment of Urethral Strictures, *J. A. M. A.* 106: 1971-1975 (June 6) 1936.

8. Thompson, G. J.: Perineal Prostatic Resection, *Proc. Staff Meet., Mayo Clin.* 12: 360-362 (June 9) 1937.

9. Cabot, Hugh: in discussion on Thompson, *Proc. Staff Meet., Mayo Clin.* 12: 362-363 (June 9) 1937.

THE TREATMENT OF ALCOHOLIC
PSYCHOSES WITH BENZED-
RINE SULFATE

PRELIMINARY REPORT

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Alcohol is recognized to have a depressing effect on the central nervous system.¹ It therefore seemed rational to us² to attempt treatment of psychoses due to intoxication from alcohol with benzedrine sulfate (beta-phenylisopropylamine sulfate), which has been established to have a stimulating effect on the central nervous system.³ Because of the nature of the results it appeared desirable to present this preliminary report.

A series of patients admitted to the Syracuse Psychopathic Hospital in psychotic states brought on by alcohol were subjected to careful physical and mental observation and then given from 10 to 30 mg. of benzedrine sulfate by mouth daily. In a few instances from 10 to 30 mg. of the drug was administered intravenously.⁴ In all cases the diagnosis was made according to the classification adopted by the American Psychiatric Association.

In an estimation of the influence of the drug in these cases consideration was given to (a) the opinion of staff members who were unaware of the medication employed in a given case, (b) the response as compared with control cases and (c) the rapidity of dissipation of the psychotic state, including confusion, with acceleration of improvement in mood, speech and coordinate motor activity, accessibility and general efficiency.

In general it may be said that mild states of depression following drinking debauches respond in an exceedingly striking manner to benzedrine sulfate. Doses of from 10 to 20 mg. of the drug given by mouth in the morning will often produce marked improvement within twenty-four hours. Several persons with alcoholic stupor were aroused within thirty minutes after the injection of from 10 to 30 mg. of benzedrine sulfate intravenously. As is to be expected, those with pathologic intoxication reacted very favorably to the drug. In cases of delirium tremens and of early acute hallucinosis the response was also satisfactory. In cases of chronic hallucinosis and of Korsakoff's psychosis the results were not as gratifying. Benzedrine sulfate appeared to be of most value in the treatment of alcoholic psychosis of recent onset in which organic defects of the sensorium, deterioration or personality alterations had not developed.

Some of the results are indicated in the accompanying table. A definitely and at times markedly accel-

erated rate of improvement was obtained in 93 per cent of twenty-eight patients, including fifteen patients with pathologic intoxication, five with delirium tremens, four with acute hallucinosis and four with Korsakoff's syndrome. One patient with pathologic intoxication from methyl alcohol responded very satisfactorily. In cases of delirium tremens the results with benzedrine sulfate were at least as effective as those obtained with drainage of the spinal fluid. Except for two patients with Korsakoff's psychosis complicated by arteriosclerosis, none thus far treated with benzedrine sulfate have required commitment to a hospital for chronic mental patients. We have observed⁵ that the drug at times may be of value in differentiating the states of depression due to alcohol alone, which are usually

The Treatment of Alcoholic Psychoses with Benzedrine Sulfate

Case	Days Necessary for Recovery	Accel- erated Rate of Improve- ment	Increased General Efficiency	Improve- ment in Speech Activity	Improve- ment or Eleva- tion of Mood
Pathologic Intoxication					
1. J. W.	1	+	+	+	+
2. B. L.	2	+	+	+	+
3. M. K.	2	+	+	+	+
4. O. P.	2	+	+	+	+
5. A. S.	2	+	+	+	+
6. J. P.*	3	+	+	+	+
7. D. C.	3	+	+	+	+
8. B. C.	3	+	+	+	+
9. E. K.	5	+	+	+	+
10. K. S.	5	+	+	+	+
11. C. M.	5	+	+	+	+
12. F. B.	7	+	+	+	+
13. J. C.	7	+	+	+	+
14. S. S.	10	+	+	+	+
15. A. S.	10	+	+	+	+
Delirium Tremens					
1. S. N.	1	+	+	+	+
2. T. M.	2	+	+	+	+
3. A. S.	3	+	+	+	+
4. D. C.	5	+	+	+	+
5. A. M.	7	+	+	+	+
Acute Hallucinosis					
1. B. C.	10	+	+	+	+
2. S. K.	14	+	+	+	+
3. H. C.	14	+	+	+	+
4. H. N.	14	+	+	+	+
Korsakoff's Psychosis					
1. S. D.	7	+	+	+	+
2. V. W.	14	+	+	+	+
3. J. S.†	—	—	Slight	Slight	Slight
4. L. H.†	—	—	—	—	—
Total (28 cases).....	26	26	27	27	27
	(93%)	(96%)	(96%)	(96%)	(96%)

* Methyl alcohol.

† Committed after thirty days; both patients over 60 years of age.

rapidly dissipated by the drug, from the states of depression superimposed on and masking depressions of psychogenic origin, which do not respond as rapidly to the drug.

In states of intoxication with alcohol in which no psychosis was demonstrable, benzedrine sulfate usually produced an even more satisfactory response than in states of intoxication in which a psychosis existed. The headache, fatigue, languor and mental retardation which are characteristic of a "hang-over" usually disappeared within an hour or so after a morning dose of from 5 to 10 mg. A similar response in several patients was mentioned by Wilbur, MacLean and Allen.⁵ We suggest that benzedrine sulfate may produce these beneficial responses in alcoholic states through its action of stimulating the central and the sympathetic

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2. Davidoff, Eugene: A Clinical Study of the Effect of Benzedrine on Self-Absorbed Patients, *Psychiat. Quart.* **10**: 652-659 (Oct.) 1936. Davidoff, Eugene, and Reifenshtein, E. C., Jr.: The Stimulating Action of Benzedrine Sulfate: A Comparative Study of the Responses of Normal Persons and of Depressed Patients, *J. A. M. A.* **108**: 1770-1776 (May 22) 1937.

3. Prinzmetal, Myron, and Bloomberg, Wilfred: The Use of Benzedrine for the Treatment of Narcolepsy, *J. A. M. A.* **105**: 2051-2054 (Dec. 21) 1935. Nathanson, M. H.: The Central Action of Beta-Aminopropylbenzene (Benzedrine), *ibid.* **108**: 528-531 (Feb. 13) 1937. Davidoff, E. C., and Reifenshtein, E. C.

4. Mr. Theodore B. Wallace, of Smith, Kline and French Laboratories, Philadelphia, supplied the benzedrine sulfate tablets and ampules for intravenous use.

5. Wilbur, D. L.; MacLean, A. R., and Allen, E. V.: Clinical Observations on the Effect of Benzedrine Sulfate: A Study of Patients with States of Chronic Exhaustion, Depression and Psychoneurosis, *J. A. M. A.* **109**: 549-554 (Aug. 21) 1937.

nervous system and also directly by neutralizing or antagonizing the alcohol itself.

A number of persons have compared the sensations produced by benzedrine sulfate with those of a mild state of alcoholic intoxication; one characterized his experience as "a cheap jag." Those who had a liking for spirituous liquors particularly relished the drug. Because of these pleasurable sensations many persons request the drug or procure it for themselves at pharmacies. We are convinced that, in certain persons at least, benzedrine sulfate is habit forming. We have observed such tendencies in persons addicted to alcohol, morphine and other drugs; in neurotic persons who crave medication, and in people who work under excessive strain, such as actors, students, nurses and physicians.

That alcoholism is often a manifestation of an underlying psychoneurotic personality is well recognized. Benzedrine sulfate may prove to be of value in overcoming alcoholic habituation; however, it is open to question whether this drug should be administered to persons who have demonstrated a tendency to addiction by their chronic alcoholic habits.

Because of this danger of addiction, because of the relatively frequent and unpredictable occurrence of untoward effects (as we have previously mentioned²) and because of the occasional appearance of serious toxic reactions,⁶ we believe that the use of benzedrine sulfate in states of alcoholism with or without psychosis can rarely be justified outside of institutions. That successful treatment of chronic alcoholism itself requires hospitalization in an institution set aside for this purpose is becoming increasingly apparent, and this is evidenced by the proposed erection of such an institution by the state of New York. Only by thus restricting the use of benzedrine sulfate to inpatients can physicians be assured of adequate supervision, which will minimize the dangers of unfavorable events and prevent the abuse of this useful drug.

SUMMARY

1. In twenty-eight patients with psychosis due to intoxication from alcohol, benzedrine sulfate produced a definite and at times a marked acceleration of improvement in 93 per cent. The drug appeared to be of most value in the cases of recent onset but exercised a favorable influence on alcoholic depressions in general.

2. In states of intoxication brought on by alcohol in which no psychosis was demonstrable an even more satisfactory response to benzedrine sulfate was obtained. The depressive after-effects of alcoholism were usually rapidly dissipated.

3. The use of benzedrine sulfate in states of alcoholism with or without psychosis should be limited to institutionalized patients, in whom the dangers of habit formation with benzedrine sulfate itself and of harm from unpredictable untoward effects or serious toxic reactions can be adequately safeguarded. Under these conditions the drug may prove to be of value in overcoming chronic alcoholic habituation.

708 Irving Avenue.

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FATALITIES FOLLOWING INJECTION TREATMENT OF HERNIA

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In estimating the value of the injection treatment of hernia, a significant consideration is its adaptability to use by those who treat relatively few cases, and especially those who have not been accustomed to applying the surgical treatment for hernia. Because many such individuals are now treating hernia by the injection method, and because its extreme safety has been so strongly stressed by many writers, it seems justifiable to submit evidence to the contrary, in an effort to emphasize certain inherent dangers in the method. The ultimate status of the injection treatment will depend largely on the percentage of cures indicated by unbiased critical follow-up studies of not less than three year periods. At present such conclusions cannot be drawn.¹ In the meantime considerable evidence should accrue regarding the more acute complications of the treatment. This report is a consideration of two deaths due to the injection of inguinal hernia, in which the complication arose from too deep insertion of the needle, producing an intraperitoneal injection. Two previous cases are reported in the literature.² The factors surrounding cases of this type are such as to lessen the chances of their being reported. This suggests a higher incidence of the complication than the literature would indicate.

The occurrence of intraperitoneal injection must be assumed to vary considerably, being lowest in the hands of those skilled in the method and increasing in frequency in the hands of those with more limited experience. Some writers emphasize the importance of deep injections in obtaining good results.³ Those following this technic rather than trying to inject just below the external oblique aponeurosis will certainly have a higher incidence of intraperitoneal injections. In their own series Harris and White³ report this complication eight times in 3,000 injections. This may be taken to represent an incidence of approximately one intraperitoneal injection in every twenty cases treated for unilateral hernia and may be accepted as a minimum incidence of the complication.

Most writers on the technic of injection treatment consider the problem of intraperitoneal injection at some length, as it obviously is the most significant danger in the method. It is emphasized that all injections be given slowly, so that a minimum amount of sclerosing fluid will have been given in case that characteristic diffuse hypogastric pain occurs. There are admittedly no criteria which indicate before the injection is started that the needle has entered the peritoneal cavity. It is emphasized in the literature that this immediate reaction should not be considered an indication for laparotomy because the reaction passes quickly and there are no sequelae. In contrast to these conceptions, it is my opinion that the fibrinous chemical peritonitis resulting from the presence of the fluid can produce adhesions as a part of the healing process and

From the Department of Surgery, University of Southern California School of Medicine and the Los Angeles General Hospital.
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condition the development of intestinal obstruction. Such cases are being recognized. In addition to this danger it is undeniable that the needle can be inserted into the bowel wall and even into its lumen. Injection of the bowel wall, particularly if complicated by infection, may produce sloughing, perforation and peritonitis. The following cases represent complications of this type. Both were admitted to the Los Angeles General Hospital in a condition requiring immediate attention, their previous treatment having been given elsewhere. The injection had been made in one instance by an irregular practitioner, in the other by a regular physician specializing in the injection treatment.

REPORT OF CASES

CASE 1.—J. S., a man aged 57, a laborer, had acquired bilateral inguinal hernia approximately three years before. Injection treatment had recently been started, four injections having been made on the left and two on the right side. Three days preceding admission a third injection of quinine and urea hydrochloride was given on the right side, followed by severe pain in the right lower quadrant. The severe pain lasted two hours and gradually decreased until it was but slight after twelve hours. The following morning (eighteen hours later) vomiting occurred, persisted with increasing frequency to the time of admission and was associated with obstipation.

Examination revealed that the patient was toxic and dehydrated, with a temperature of 98.6 F., pulse rate 124 and respiratory rate 24. The arterial blood pressure measured 116 mm. of mercury systolic and 88 diastolic. The abdomen was distended, diffusely rigid and tender, and only an occasional peristaltic sound was heard. No significant abnormalities were present in the urine. The white blood cells numbered 7,600, with 93 per cent of polymorphonuclear leukocytes.

Laparotomy was done soon after admission. A 2 cm. perforation of the ileum was found on its antimesenteric border, about 75 cm. from the ileocecal valve. This was surrounded by a large amount of plastic exudate, partially walling off the bowel content which had been passed out through the opening. A large part of this bowel content was a green vegetable. Two rows of Lambert sutures were placed to close the perforation transversely and the peritoneal cavity was drained. Death occurred eighteen hours later. Autopsy revealed an acute generalized peritonitis.

CASE 2.—M.F.D., a man aged 47, a laborer, entered the hospital complaining of abdominal pain. Ten days before, following injection given for bilateral inguinal hernia, he had abdominal pain and diarrhea. He was treated for enteritis and was able to resume work. Five days before admission to the hospital he had severe left lower quadrant pain, associated with collapse. Many details of the history could not be learned.

The patient was very ill. The temperature was 99.4 F., pulse rate 108, respiratory rate 28. The arterial blood pressure measured 150 mm. of mercury systolic and 90 diastolic. There was marked abdominal distention, with tenderness graded three plus in both lower quadrants, and proportionate rigidity. Peristalsis was present in the upper part of the abdomen. By rectum a boggy tender mass was palpated at the upper limit of the finger's reach. A "scout" film of the abdomen showed multiple coils of intestine, both small and large, distended with gas. No pathologic changes were found in the urine. Blood examination was not made.

Laparotomy was carried out soon after the patient's admission. The lower quadrants presented a purulent exudate with a foul odor, and on the left there was considerable clotted blood. The sigmoid seemed torn from its lateral attachment and presented a 2 cm. perforation. For about 7 cm. in each direction the sigmoid looked gangrenous. The discolored area was resected, the distal segment closed and dropped, and the proximal end brought out as a single barreled colostomy. The patient died soon after the laparotomy.

Culture of the peritoneal exudate grew *Escherichia coli* and *Streptococcus viridans*. Microscopic study of the margin of

the perforation showed young granulation tissue, hemorrhage and an acute inflammatory exudate. Autopsy disclosed approximately 400 cc. of bloody fluid in the upper part of the abdomen and a fibrinopurulent exudate throughout the lower part of the abdomen.

SUMMARY

In the two cases reported, death was due to an injection made in the course of treatment for inguinal hernia. In the first case the acute process progressed from the time of injection, and in the second case after an initial syndrome suggesting severe irritation of the bowel wall a quiescent period occurred, with a sudden acute progressive episode five days later, probably indicating the time of perforation. These cases constitute an indictment against the teaching that intraperitoneal injection is a harmless accident and establish that laparotomy may be necessary at any time, as an emergency procedure, on the appearance of symptoms and signs indicating a significant variation from the usual clinical course following intraperitoneal injection.

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PRECOCIOUS SEXUAL DEVELOPMENT
FROM AN ANTERIOR PITUITARY-
LIKE PRINCIPLE

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AND

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CHICAGO

Rapidly accumulating evidence clearly shows that the anterior pituitary-like principle from the urine of pregnant women exerts a profound influence on the growth and function of the male genitalia. It may produce an increase in the size of the penis, scrotum and prostate in both man¹ and animals² before the age of puberty. The consensus is that in the testis it influences primarily the interstitial cells,³ although there is some evidence

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nervous system and also directly by neutralizing or antagonizing the alcohol itself.

A number of persons have compared the sensations produced by benzedrine sulfate with those of a mild state of alcoholic intoxication; one characterized his experience as "a cheap jag." Those who had a liking for spirituous liquors particularly relished the drug. Because of these pleasurable sensations many persons request the drug or procure it for themselves at pharmacies. We are convinced that, in certain persons at least, benzedrine sulfate is habit forming. We have observed such tendencies in persons addicted to alcohol, morphine and other drugs; in neurotic persons who crave medication, and in people who work under excessive strain, such as actors, students, nurses and physicians.

That alcoholism is often a manifestation of an underlying psychoneurotic personality is well recognized. Benzedrine sulfate may prove to be of value in overcoming alcoholic habituation; however, it is open to question whether this drug should be administered to persons who have demonstrated a tendency to addiction by their chronic alcoholic habits.

Because of this danger of addiction, because of the relatively frequent and unpredictable occurrence of untoward effects (as we have previously mentioned²) and because of the occasional appearance of serious toxic reactions,⁶ we believe that the use of benzedrine sulfate in states of alcoholism with or without psychosis can rarely be justified outside of institutions. That successful treatment of chronic alcoholism itself requires hospitalization in an institution set aside for this purpose is becoming increasingly apparent, and this is evidenced by the proposed erection of such an institution by the state of New York. Only by thus restricting the use of benzedrine sulfate to inpatients can physicians be assured of adequate supervision, which will minimize the dangers of unfavorable events and prevent the abuse of this useful drug.

SUMMARY

1. In twenty-eight patients with psychosis due to intoxication from alcohol, benzedrine sulfate produced a definite and at times a marked acceleration of improvement in 93 per cent. The drug appeared to be of most value in the cases of recent onset but exercised a favorable influence on alcoholic depressions in general.

2. In states of intoxication brought on by alcohol in which no psychosis was demonstrable an even more satisfactory response to benzedrine sulfate was obtained. The depressive after-effects of alcoholism were usually rapidly dissipated.

3. The use of benzedrine sulfate in states of alcoholism with or without psychosis should be limited to institutionalized patients, in whom the dangers of habit formation with benzedrine sulfate itself and of harm from unpredictable untoward effects or serious toxic reactions can be adequately safeguarded. Under these conditions the drug may prove to be of value in overcoming chronic alcoholic habituation.

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FATALITIES FOLLOWING INJECTION TREATMENT OF HERNIA

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In estimating the value of the injection treatment of hernia, a significant consideration is its adaptability to use by those who treat relatively few cases, and especially those who have not been accustomed to applying the surgical treatment for hernia. Because many such individuals are now treating hernia by the injection method, and because its extreme safety has been so strongly stressed by many writers, it seems justifiable to submit evidence to the contrary, in an effort to emphasize certain inherent dangers in the method. The ultimate status of the injection treatment will depend largely on the percentage of cures indicated by unbiased critical follow-up studies of not less than three year periods. At present such conclusions cannot be drawn.¹ In the meantime considerable evidence should accrue regarding the more acute complications of the treatment. This report is a consideration of two deaths due to the injection of inguinal hernia, in which the complication arose from too deep insertion of the needle, producing an intraperitoneal injection. Two previous cases are reported in the literature.² The factors surrounding cases of this type are such as to lessen the chances of their being reported. This suggests a higher incidence of the complication than the literature would indicate.

The occurrence of intraperitoneal injection must be assumed to vary considerably, being lowest in the hands of those skilled in the method and increasing in frequency in the hands of those with more limited experience. Some writers emphasize the importance of deep injections in obtaining good results.³ Those following this technic rather than trying to inject just below the external oblique aponeurosis will certainly have a higher incidence of intraperitoneal injections. In their own series Harris and White³ report this complication eight times in 3,000 injections. This may be taken to represent an incidence of approximately one intraperitoneal injection in every twenty cases treated for unilateral hernia and may be accepted as a minimum incidence of the complication.

Most writers on the technic of injection treatment consider the problem of intraperitoneal injection at some length, as it obviously is the most significant danger in the method. It is emphasized that all injections be given slowly, so that a minimum amount of sclerosing fluid will have been given in case that characteristic diffuse hypogastric pain occurs. There are admittedly no criteria which indicate before the injection is started that the needle has entered the peritoneal cavity. It is emphasized in the literature that this immediate reaction should not be considered an indication for laparotomy because the reaction passes quickly and there are no sequelae. In contrast to these conceptions, it is my opinion that the fibrinous chemical peritonitis resulting from the presence of the fluid can produce adhesions as a part of the healing process and

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condition the development of intestinal obstruction. Such cases are being recognized. In addition to this danger it is undeniable that the needle can be inserted into the bowel wall and even into its lumen. Injection of the bowel wall, particularly if complicated by infection, may produce sloughing, perforation and peritonitis. The following cases represent complications of this type. Both were admitted to the Los Angeles General Hospital in a condition requiring immediate attention, their previous treatment having been given elsewhere. The injection had been made in one instance by an irregular practitioner, in the other by a regular physician specializing in the injection treatment.

REPORT OF CASES

CASE 1.—J. S., a man aged 57, a laborer, had acquired bilateral inguinal hernia approximately three years before. Injection treatment had recently been started, four injections having been made on the left and two on the right side. Three days preceding admission a third injection of quinine and urea hydrochloride was given on the right side, followed by severe pain in the right lower quadrant. The severe pain lasted two hours and gradually decreased until it was but slight after twelve hours. The following morning (eighteen hours later) vomiting occurred, persisted with increasing frequency to the time of admission and was associated with obstipation.

Examination revealed that the patient was toxic and dehydrated, with a temperature of 98.6 F., pulse rate 124 and respiratory rate 24. The arterial blood pressure measured 116 mm. of mercury systolic and 88 diastolic. The abdomen was distended, diffusely rigid and tender, and only an occasional peristaltic sound was heard. No significant abnormalities were present in the urine. The white blood cells numbered 7,600, with 93 per cent of polymorphonuclear leukocytes.

Laparotomy was done soon after admission. A 2 cm. perforation of the ileum was found on its antimesenteric border, about 75 cm. from the ileocecal valve. This was surrounded by a large amount of plastic exudate, partially walling off the bowel content which had been passed out through the opening. A large part of this bowel content was a green vegetable. Two rows of Lembert sutures were placed to close the perforation transversely and the peritoneal cavity was drained. Death occurred eighteen hours later. Autopsy revealed an acute generalized peritonitis.

CASE 2.—M.F.D., a man aged 47, a laborer, entered the hospital complaining of abdominal pain. Ten days before, following injection given for bilateral inguinal hernia, he had abdominal pain and diarrhea. He was treated for enteritis and was able to resume work. Five days before admission to the hospital he had severe left lower quadrant pain, associated with collapse. Many details of the history could not be learned.

The patient was very ill. The temperature was 99.4 F., pulse rate 108, respiratory rate 28. The arterial blood pressure measured 150 mm. of mercury systolic and 90 diastolic. There was marked abdominal distention, with tenderness graded three plus in both lower quadrants, and proportionate rigidity. Peristalsis was present in the upper part of the abdomen. By rectum a boggy tender mass was palpated at the upper limit of the finger's reach. A "scout" film of the abdomen showed multiple coils of intestine, both small and large, distended with gas. No pathologic changes were found in the urine. Blood examination was not made.

Laparotomy was carried out soon after the patient's admission. The lower quadrants presented a purulent exudate with a foul odor, and on the left there was considerable clotted blood. The sigmoid seemed torn from its lateral attachment and presented a 2 cm. perforation. For about 7 cm. in each direction the sigmoid looked gangrenous. The discolored area was resected, the distal segment closed and dropped, and the proximal end brought out as a single barreled colostomy. The patient died soon after the laparotomy.

Culture of the peritoneal exudate grew *Escherichia coli* and *Streptococcus viridans*. Microscopic study of the margin of

the perforation showed young granulation tissue, hemorrhage and an acute inflammatory exudate. Autopsy disclosed approximately 400 cc. of bloody fluid in the upper part of the abdomen and a fibrinopurulent exudate throughout the lower part of the abdomen.

SUMMARY

In the two cases reported, death was due to an injection made in the course of treatment for inguinal hernia. In the first case the acute process progressed from the time of injection, and in the second case after an initial syndrome suggesting severe irritation of the bowel wall a quiescent period occurred, with a sudden acute progressive episode five days later, probably indicating the time of perforation. These cases constitute an indictment against the teaching that intraperitoneal injection is a harmless accident and establish that laparotomy may be necessary at any time, as an emergency procedure, on the appearance of symptoms and signs indicating a significant variation from the usual clinical course following intraperitoneal injection.

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PRECOCIOUS SEXUAL DEVELOPMENT FROM AN ANTERIOR PITUITARY- LIKE PRINCIPLE

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Rapidly accumulating evidence clearly shows that the anterior pituitary-like principle from the urine of pregnant women exerts a profound influence on the growth and function of the male genitalia. It may produce an increase in the size of the penis, scrotum and prostate in both man¹ and animals² before the age of puberty. The consensus is that in the testis it influences primarily the interstitial cells,³ although there is some evidence

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that the seminiferous tubules may also be affected.⁴ Some increase in the size of the testes has been produced in rats⁵ and monkeys.⁶ In the course of treating patients for undescended testes we have been struck more by its influence on the growth of the genitalia than by its influence on the descent of the testis.⁷ It will be shown that this stimulation of genital growth may be so marked that changes simulating premature puberty are produced.

DATA

In the course of treating thirty-three patients for undescended testis with the anterior pituitary-like principle,⁸ genital growth was produced in eighteen, and in fourteen it was marked. In two of them, aged 7 and 9 years, a condition resembling premature puberty resulted. The penis became as large as that of an adult. There was an increase in the size of the scrotum and prostate, a growth of pubic hair, a marked increase in frequency of erections, a change in the pitch of the voice, and in one a growth of hair on the sides of the face. Similar changes were produced in a 4 year old boy out of a total of twelve patients with hypogenitalism, and less marked growth in eight others. The boy showing changes simulating premature puberty was of normal body contour but had an atrophic left testis. All boys showing genital growth became more masculine. It should be pointed out that in some of the patients with undescended testes and hypogenitalism who failed to show any growth the dose may have been inadequate, there being several examples in our series of failure of growth with a small dose and a well marked growth with a larger dose.

REPORT OF THREE CASES IN WHICH A SYNDROME SIMULATING PREMATURE PUBERTY DEVELOPED

CASE 1.—T. D., an Italian boy aged 6 years and 7 months came to the clinic July 16, 1936, because of failure of descent of the right testis. He was of normal body contour but slightly short for his age. In the erect posture the right testis was at the level of the external ring but could not be displaced downward. There was some question of a right inguinal hernia, which may have accounted for a painful swelling which had occurred occasionally since he was 2 months old. The penis measured 3.8 by 1.9 cm. and the left testis 2.2 by 1.2 cm. The prostate was not palpable. Treatment with follutein was begun August 7 and the dose rapidly increased to 200 rat units six times a week. September 11, after he had had a total of 5,370 units, his mother stated that the right testis had been

in the scrotum since two weeks after the treatment was started. However, on physical examination the right testis was felt just above the upper end of the scrotum with the patient in the upright position and could be pulled into the upper end of the scrotum. The penis and scrotum were larger, erections were more frequent and he had started to masturbate. September 24, after a total of 7,570 units, the right testis, associated with what appeared to be a hernia, was in the upper end of the scrotum and could be pulled to a lower level in the scrotum. The penis measured 5.1 by 2.7 cm. and the left testis 2.8 by 1.9 cm. There were several pubic hairs as much as 0.9 cm. long. The prostate was about 2 cm. in diameter. Erection continued to be frequent. October 30, after he had had a total of 13,170 units of follutein, both testes were in the scrotum but the right testis was attached to what was thought to be a peritoneal pouch. The penis measured 5.4 by 2.5 cm. and the left testis 2.5 by 1.4 cm. The prostate was about 3 cm. in diameter and was full. The pubic hairs were as much as 1.6 cm. long. The scrotum had enlarged. December 11, after he had had a total of 19,770 units, the right testis was in the upper end of the scrotum and estimated to be about 0.7 cm. in diameter. Extending for from 2.5 to 3.8 cm. below it was the fluctuant mass previously described. The penis measured 7 by 3 cm. and the left testis 2.5 by 1.4 cm. The pubic hair had grown so that it was as much as 4.4 cm. long. The prostate was enlarged, well defined and about 2.5 cm. in diameter.

Jan. 15, 1937, after he had had a total of 24,970 units of follutein, the right testis was still in the upper end of the scrotum with a sac extending below it. The penis measured 6.7 by 3.2 cm. and the left testis 2.9 by 1.6 cm. The prostate was 2.5 cm. in diameter. There was a marked increase in pubic hair, which was as much as 5.1 cm. long. February 26, after a total of 26,770 units, the right testis was in the upper end of the scrotum and surrounded by a sac which extended 2.5 cm. below it. This sac was not in the scrotum before treatment was started and with treatment had grown down to the lower end of the scrotum, which had also enlarged. The penis measured 6.4 by 3.8 cm. and the left testis 2.9 by 1.9 cm. The right testis was in about the same position. The prostate was about the same size as on the previous examination, and the pubic hairs were abundant and as much as 7 cm. long. It was stated that his voice began to show lowering of pitch about one month after the treatment was started. The hair on the sides of his face was long for his age, but we could not be sure whether it had grown during treatment or not. By April 9 there was not much further change. The penis measured 6.7 by 3 cm. and the left testis 2.9 by 1.6 cm.; the right testis was a small, hard, cherry-sized nodule in the upper end of the scrotum. The prostate was well developed and about 3 cm. in diameter.

May 28, 1937, after he had had a total of 47,370 units, a small hard right testis 0.7 cm. in diameter was still felt in the upper end of the scrotum, lying attached to the pouch previously described. The penis measured 7.3 by 3.2 cm. and the left testis 2.5 by 1.4 cm. The left testis was at a much lower level and the scrotum was much larger than before treatment was started. July 16, after a total of 55,370 units, the firm hard right testis, about 0.7 cm. in diameter, was still felt in the upper end of the scrotum associated with the pouch already described. The penis measured 7 by 3.2 cm. and the left testis 2.5 by 1.4 cm. The prostate had not changed in size. Erections continued to be very frequent. The pubic hairs were about the same.

At 11 a. m. August 19, after the patient had received a total of 60,570 units, a firm painful swelling about 6 cm. in diameter developed in the right side of the scrotum. This swelling could not be reduced by manipulation. Operative procedures were started at 3 p. m., the usual right herniotomy incision being made. A purplish loop of bowel was found extending down to the extreme upper end of the scrotum and held down at both the external and internal ring. Extending about 6.4 cm. below this loop of bowel was a fluctuant swelling containing about 100 cc. of clear yellow fluid. This represented a marked increase in the size of the pouch previously described. The increase in the fluid was apparently caused by transudation associated with the strangulated hernia. At the proximal posterior end of this fluctuant swelling, just distal to the loop of bowel, was an atrophic white testis measuring about 1.5 by

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8. We used two preparations of the anterior pituitary-like principle, follutein of E. R. Squibb and Sons, and A. P. L. of Ayerst, McKenna and Harrison. These were supplied by the respective companies.

0.7 cm. This was larger than the previous estimates. The strangulated bowel was returned to the abdominal cavity. A tunica vaginalis was formed from part of the peritoneal pouch and the testis placed in the scrotum.

Aug. 12, 1936, the patient's basal metabolism was minus 11 per cent. March 6, 1937, it was minus 16 per cent. March 27, 1937, it was minus 10 per cent. His weight increased from

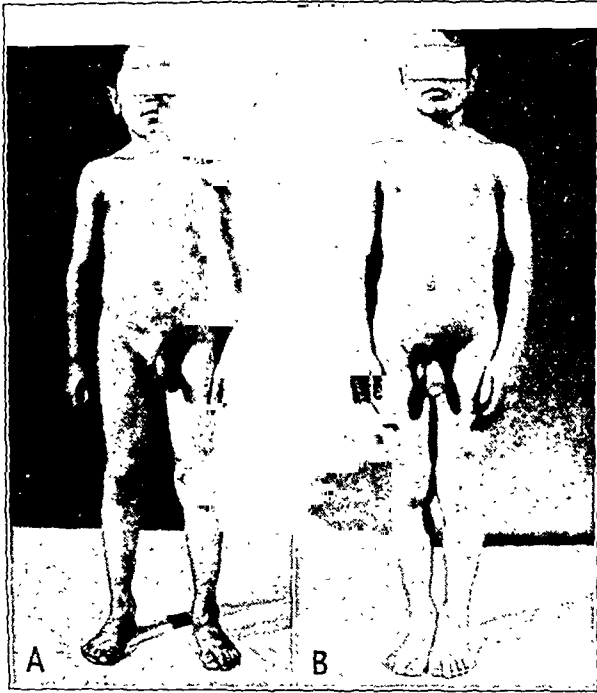


Fig. 1.—Precocious sexual development in case 1: A, July 18, 1936, before treatment, age 6 years 7 months; B, July 24, 1937, after eleven and one half months of treatment with anterior pituitary-like principle (total dose 56,570 rat units).

19.5 Kg. Aug. 12, 1936, to 26.5 Kg. by March 27, 1937. During the same period his height increased from 113.7 cm. to 123.2 cm. March 8, 1937, there appeared to be about normal development of the epiphysial lines of the knees and elbows and on July 30 there was no evidence of any premature closing.

Photographs of this patient during the course of treatment are shown in figures 1 and 2. It is of interest that at the age of 7 years he had a penis larger than that of his father.

CASE 2.—E. W., aged 9 years and 1 month, came to the clinic June 19, 1936, because the testes had not been brought to a sufficiently low level by operative procedures. A right orchidopexy had been done at the Cook County Hospital July 31, 1935, and a left orchidopexy at the same institution Oct. 15, 1935. The position of the right testis before operation was not described. The left testis was said to be in the canal just below the internal ring. On each side the undescended testis was associated with a small hernia. When we first saw the patient each testis was about the size of "a small cherry" and located at the junction of the scrotum and the opening above it. The scrotum was small. The penis measured 4.1 by 2.2 cm. The prostate was barely palpable. The pubic hair was just a fine fuzz. The body contour was normal. Treatment with follutein was started July 27, 1936, and the dose rapidly increased until he was receiving 200 rat units six times a week. Aug. 7, 1936, after he had had a total of 1,520 units, the penis had enlarged to 5.4 by 2.2 cm. and the prostate was about 2.5 cm. in diameter. Erections had become more frequent. There was no definite change in the position of the testes. September 24, after he had had a total of 7,720 units, each testis was the size of "a large cherry" and seemed to be at a slightly lower level. The penis measured 5.1 by 2.7 cm. and the prostate was about 2 cm. in diameter.

October 30, after he had had a total of 12,720 units, the testes were at a definitely lower level than before treatment was started, although still in the upper part of the scrotum. The penis measured 6.1 by 2.7 cm., the right testis 2.5 by 1.6 cm. and the left testis 2.9 by 1.9 cm. The prostate was well defined and about 2 cm. in diameter.

December 11, after he had had a total of 17,320 units, the genitalia had grown still more and the testes were at a slightly lower level in the scrotum, which was enlarging. The penis measured 7 by 3 cm. and the prostate was about 2.5 cm. in diameter. The pubic hairs had grown slightly. By Jan. 15, 1937, after he had had a total of 19,520 units, the penis measured 7.3 by 3 cm., the right testis 3.2 by 2.5 cm. and the left testis 3.8 by 2.5 cm. The prostate was about 2.5 cm. in diameter and there were several pubic hairs as much as 1.2 cm. long. By February 26, after he had had a total of 23,320 units, the penis was about the same size as at the time of the previous examination and each testis measured 3.5 by 2.2 cm. The pubic hairs were as much as 1.9 cm. long. His voice had become lower in pitch, he was very aggressive and his muscles were hard. Erections continued to be frequent. April 9, 1937, after a total of 27,120 units, his scrotum had developed more and his testes were at a lower level. The penis measured 7.6 by 3 cm., the right testis 3.2 by 2.4 cm. and the left testis 3.5 by 1.9 cm. The pubic hair was about the same as on February 26. The prostate was about 2 cm. in diameter. May 28, after a total of 31,520 units, the measurements, except for the penis, which was 7.3 by 3 cm., were about the same. The pubic hair was scanty but as much as 5.1 cm. long. July 16, after a total of 34,720 units had been administered, the penis measured 7 by 2.9 cm., the right testis 2.5 by 1.9 cm. and the left testis 3.2 by 1.9 cm. The pubic hairs were about the same as on the last examination.

His basal metabolic rate was minus 4 per cent June 17, 1936, and minus 5 per cent April 10, 1937. During this period his weight increased from 30.7 Kg. to 38.2 Kg. and his height increased from 139 cm. to 148 cm. Roentgenograms of his knees and elbows taken March 8, 1937, and Nov. 6, 1937, show the development of the epiphyses to be normal.

The effect of treatment in this case is shown in figure 3.

CASE 3.—R. S., a boy aged 4 years and 11 months and of normal body contour, was referred to us by the Pediatrics Department Nov. 23, 1936, because of supposed failure of descent of the left testis. There was a history of undescended testis in a second cousin on each side of the family. The

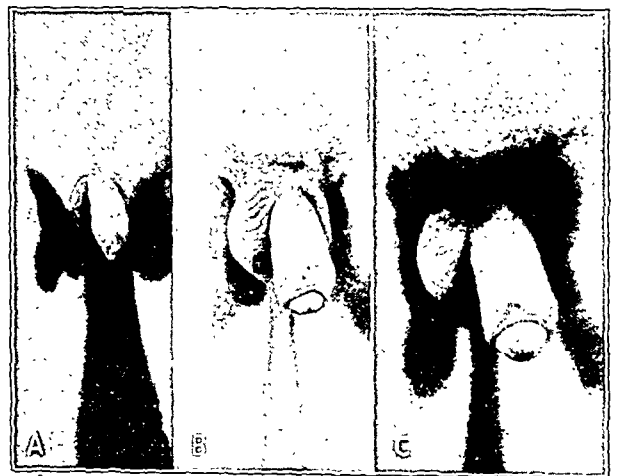


Fig. 2.—Stages in development in case 1: A, July 18, 1936, before treatment; B, Dec. 12, 1936, after 19,970 rat units of anterior pituitary-like principle; C, April 15, 1937, after 39,970 rat units of anterior pituitary-like principle.

patient was reported to have been born with a swelling "in the region of the right testis," which disappeared soon after the application of heat. At the time of the first examination it was thought that the peritoneal process was felt in the scrotum on the left, but the testis itself was not felt. In view of our subsequent finding of a small atrophic mass on the left side of

the scrotum we are inclined to believe that the testis may have been in the scrotum at the time of the first examination but was not felt because of its small size. However, we must also admit the possibility that the descent of this small atrophic testis may have been produced by treatment. The penis measured 3.8 by 1.6 cm. and the right testis 2.9 by 1.7 cm. Treatment with A. P. L. and maturity factors⁹ was started Dec. 3, 1936. The dose was quickly increased to 200 rat units of A. P. L. and 25 rat units of maturity factors six times a week. December 11, after he had had a total of 1,120 units of A. P. L. and 150 units of maturity factors, the penis measured 4.1 by 2.9 cm. and the right testis 3.8 by 2.9 cm.; the left testis was reported not to be palpable. The prostate was not palpable. Jan. 15, 1937, after he had received 4,320 units of A. P. L. and 550 units of maturity factors, the penis measured 6.7 by 2.1 cm. and the right testis 3.2 by 1.7 cm. We were not certain whether a small mass in the left side of the scrotum represented the left testis or not. The prostate had enlarged and erections had become more frequent. February 18, special strength A. P. L., which contained 500 rat units per cubic centimeter, was substituted for the weaker solution, which contained 100 rat units per cubic centimeter, and by February 23 the dose had been increased to 1,000 units six times a week. The dose of maturity factors remained unchanged. February 26, after he had had a total of 12,520 units of A. P. L. and 1,175 units of maturity factors, the penis measured 5.9 by 2.2 cm. and the right testis 3.2 by 2.2 cm. A small atrophic mass in the left side of the scrotum was thought to be the left testis. The prostate was about 1.5 cm. in diameter and bulged into the rectum. April 9, after he had had 29,020 units of A. P. L. and 1,925 units of

of 55,020 units of A. P. L. and 3,225 units of maturity factors. On this date the penis measured 6.7 by 2.5 cm. and the right testis 3.2 by 1.6 cm. A small nodule in the left side of the scrotum was thought to be the left testis because what seemed like a vas deferens was felt above it. The left side of the scrotum was not as well developed as the right. The prostate bulged into the rectum and was about 2.5 cm. in diameter. Pubic hair was as much as 3.8 cm. long. Although there was

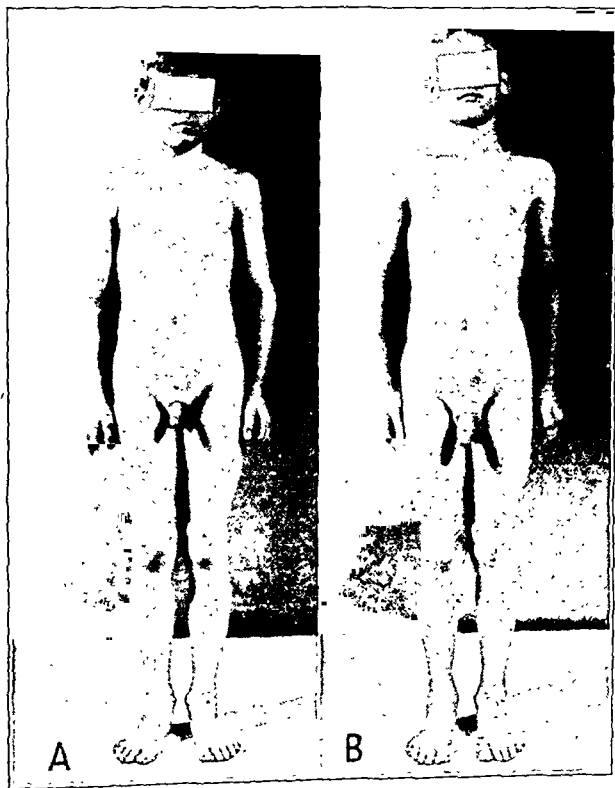


Fig. 3.—Precocious sexual development in case 2: A, June 19, 1936, before treatment; age 9 years 1 month; B, July 31, 1937, after one year of treatment with anterior pituitary-like principle (total dose 35,920 rat units).

maturity factors, the penis measured 7.3 by 2.4 cm. and the right testis 3.8 by 2.1 cm. The scrotum was unusually well developed for his age. On the left side of the scrotum was a small nodule about 0.4 cm. in diameter which was thought to be the left testis. The prostate was full and measured about 3 cm. in diameter. There had been a definite growth of pubic hair, which was as much as 2.5 cm. long. The patient missed some of his appointments, but by July 16, 1937, he had had a total

9. We used the anterior hypophyseal maturity factors (gonadotropic) of Ayerst, McKenna and Harrison.



Fig. 4.—Precocious sexual development in case 3: A, Dec. 2, 1936, before treatment; age 4 years 11 months; B, July 17, 1937, after seven and one-half months of treatment with anterior pituitary-like principle (55,020 rat units) and gonadotropic maturity factors (3,225 units).

some hair on the sides of his face, it was uncertain whether it had increased any with treatment. His voice seemed husky, but the mother was unwilling to admit that any change had occurred. She also stated that there had been no change in the patient's virility.

From Dec. 2, 1936, until April 10, 1937, four basal metabolic rates varied from plus 1 to minus 10 per cent. During this period his weight increased from 20.1 Kg to 22.3 Kg, and his height from 112 cm. to 114 cm. March 9, 1937, the x-ray department reported that the ossification center for the capitellum was present in the elbows. No other ossification centers were seen. All the ossification centers were present in the knees and were fairly well developed.

The effect of treatment in this case is shown in figures 4 and 5.

COMMENT

In all these patients the marked increase in the size of the penis, scrotum and prostate and the development of pubic hair furnishes a striking contrast to the absence of a clearcut increase in the size of the testis. At the end of treatment the testes were small in comparison with other parts of the genitalia. In this respect, our results were similar to those obtained in animal experiments.

The growth of pubic hair was more marked in case 1 than in the other cases.

In all cases the response to the stimulus was prompt. In case 1 the penis grew 1.3 cm. in forty-eight days, although the patient had received only 7,570 units of

follutein. In case 2 the penis increased 1.3 cm. in eleven days, although a total of only 1,520 units of follutein had been administered. In case 3 some increase in the size of the penis was noted in eight days, although only 1,120 units of A. P. L. and 150 units of maturity factors had been administered.

The growth of the genitalia seemed to reach a maximum quickly. In case 1 the penis was about as long after only a little more than four months of treatment as at the end of eleven months, in case 2 it was about as large at the end of four and one-half months of treatment as at the end of eleven and one-half months, and in case 3 it was nearly as large after one and one-half months of treatment as it was at the end of eight and one-half months.

The fivefold increase in the strength of A. P. L. in case 3 did not seem to exert any greater influence on the size of the genitalia than the smaller dose. In several other cases we have been impressed by the marked susceptibility to this growth stimulus, the striking increase in size of the genitalia occurring with

show marked development without much change in the seminiferous tubules, and the activity of the interstitial cells seems to be responsible for the development of secondary sexual characteristics. The marked growth in other parts of the genitalia with little or no increase in the size of the testes may be consistent with the hypothesis that in the testis the anterior pituitary-like principle stimulates primarily the interstitial cells. Increased activity of the interstitial cells of the testis may be responsible for the growth of the penis, prostate, scrotum and pubic hair. From a biologic point of view, the problem is whether this material (or a related substance) is involved in normal puberty or whether it merely mimics the changes that occur during this period. If it is involved, it must be only one factor, because normal development of the testis apparently cannot be explained by the presence of this material alone. In view of its production in large quantities in the early months of pregnancy, it is pertinent to inquire whether it plays an essential role in the early development of the genitalia.

Premature puberty is said to be produced in man by tumors of the adrenal cortex and pineal gland and occasionally by tumors of the testes and lesions of the midbrain.¹⁰ Its relation to pituitary¹¹ disturbances is open to question. There are cases which can be explained only by a marked familial tendency to precocious development.¹² In animals, thymus extracts are reported to be powerful sex stimulants.¹³ It would

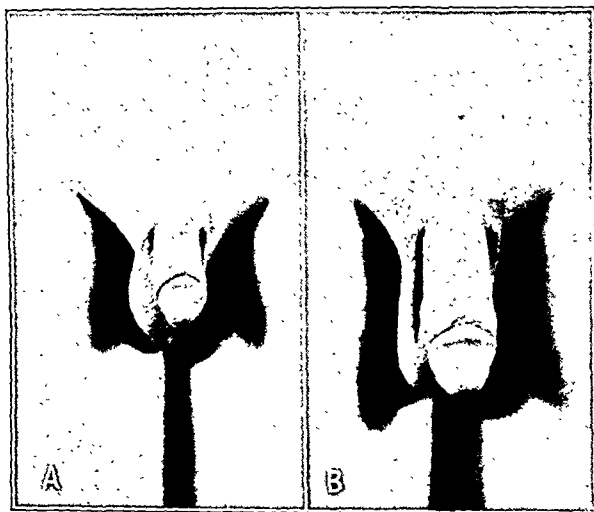


Fig. 5.—Close-up of genitalia in case 3: A, Dec. 2, 1936, before treatment; B, July 17, 1937, after 55,020 rat units of anterior pituitary-like principle and 3,225 units of gonadotropic maturity factors.

comparatively small doses. On the other hand, it cannot be concluded that there is a lack of susceptibility to the stimulus unless very large doses (from 2,000 to 2,500 rat units daily) are administered.

It is to be noted that although this material produced descent of the right testis in case 1, it failed to correct the associated congenital abnormality: the hernial pouch. This grew into the scrotum as the testis descended and failed to become obliterated, as happens in normal development, to form the tunica vaginalis.

The susceptibility of the genitalia to this growth stimulus appears to be greater before than after puberty, but even after puberty it is not completely absent. We have produced genital growth by the use of this material in a child as early as the age of 3 years and in a man as late as the age of 37 years. The various factors which influence the susceptibility of the genitalia to it and the mechanism of its action are not precisely defined. We do not know whether spermatogenesis occurred in the subjects of this study or not. In case 2 no spermatozoa were found in one examination of the seminal fluid. From observations in man and animals it would appear reasonably well established that in the male the interstitial cells may

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11. In the immature female rat and monkey, sexual maturity may be produced by anterior pituitary transplants and extracts from both mature and immature animals, but the male is much less susceptible: Smith, P. E., and Engle, E. T.: Experimental Evidence Regarding the Role of the Anterior Pituitary in the Development and Regulation of the Genital System, Am. J. Anat. 40:159 (Nov.) 1927. Engle, E. T.: The Pituitary-Gonadal Relationship and the Problem of Precocious Sexual Maturity, Endocrinology 15:405 (Sept.-Oct.) 1931. Allen, Edgar: Precocious Sexual Development from Anterior Hypophysis Implants in a Monkey, Anat. Rec. 39:315 (Aug. 25) 1928. Smith, P. E.: The Induction of Precocious Sexual Maturity by Pituitary Homotransplants, Am. J. Physiol. 80:114 (March) 1927. Zondek, Bernhard: Ueber die Funktion des Ovariums, Ztschr. f. Geburtsh. u. Gynäk. 90:372, 1926. Aschheim, Selmar: Ueber die Funktion des Ovariums, ibid. 90:387, 1926. Pighini, G.: Ormone preipofisario ed apparato genitale mas chile contributo al problema della maturazione puberale, Biochim. e terap. sper. 20:161 (March 31) 1933. Since puberty may be produced prematurely in this manner, it is important to know what makes puberty occur normally when it does.

12. Rush, H. P.; Bilderback, J. B.; Slocum, D., and Rogers, A.: Pubertas Praecox (Macrogenitosomia), Endocrinology 21:404 (May) 1937. Orel, H.: Kleine Beiträge zur Vererbungswissenschaft, Ztschr. f. d. ges. Anat. 73:691, 1928. Zondek, H.: The Diseases of the Endocrine Glands, Baltimore, William Wood & Co., 1935.

13. Rowntree, L. G.; Clark, J. H.; Hanson, A. M., and Steinberg, Arthur: Biologic Effects of Thymus Extract (Hanson): Accruing Acceleration in Growth and Development in Five Successive Generations of Rats Under Continuous Treatment with Thymus Extract, Arch. Int. Med. 56:1 (July) 1933.

be desirable to know whether the mechanism involved in the production of premature sexual development in these pathologic conditions is similar to the mechanism involved in its production from the administration of the anterior pituitary-like principle.

The association of premature puberty with interstitial cell tumors of the testis is of interest, in view of the fact that the anterior pituitary-like principle is known to stimulate the interstitial cells. It is also of interest that, in patients showing precocious development of the genitalia associated with tumors of the adrenal cortex, the testis shows little or no increase in size and spermatogenesis apparently does not occur.¹⁴ The absence of a familial tendency in the cases reported in this paper, the failure of careful examination to reveal any of the other known causes of premature development, and the prompt response of the genitalia to treatment in these and many other cases leave little doubt that genital growth was caused by the anterior pituitary-like principle.

These data serve as a warning against the indiscriminate use of this material in patients with undescended testes. It has been shown elsewhere that it has a very definite role in the treatment of this condition, but the patients receiving it must be followed carefully and its administration stopped before genital growth becomes excessive.

It is too early yet to know what influence, if any, precocious sexual development caused by this material exerts on skeletal growth. The fact that bone development was normal in the three cases reported does not mean that it will continue to be.

SUMMARY

Changes simulating premature puberty have been produced in three boys, 4, 7 and 9 years old, by the administration of the anterior pituitary-like principle from the urine of pregnant women. These changes consisted of an increase in the size of the penis, scrotum and prostate, increased masculinity, a growth of pubic hair and a change in the pitch of the voice.

In contrast to the marked growth of other parts of the genitalia, the testes showed very little change in size. All the boys were of normal body contour and had a normal sized penis before treatment was started. The boy 4 years old had an atrophic left testis which did not increase in size with treatment. The other two boys had undescended testes and in one of them an unsatisfactory attempt at surgical correction had been made. In both patients the testes descended to the normal position with treatment.

Some genital growth has been produced with this material in sixteen of thirty-three patients with undescended testes, and in fourteen patients, including two of the three boys who developed changes simulating premature puberty, it was marked. However, descent was produced in only 23 per cent of the total number of undescended testes, showing that genital growth may occur without descent of the testis.

The treatment for undescended testes with the anterior pituitary-like principle should be stopped before genital growth becomes marked. If this rule is followed, it would appear that in the present state of our knowledge its routine use is justifiable and desirable.

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RENAL MOBILITY

ELMER HESS, M.D.

ERIE, PA.

Renal mobility has been studied for years. Albarran was perhaps the first to notice clinically that immobility of the kidney during respiration was a helpful diagnostic sign in perinephritis with adhesions to the renal fascia.

In 1925 and for many years since then, Mathé has called attention to the lack of normal motion in certain perirenal inflammatory conditions and perhaps was among the first, if not the first, to take advantage of the fact that the pyelogram taken in the erect posture and a second pyelogram taken in the prone posture would show limitation of renal motion and would aid him in the diagnosis of many obscure perirenal pathologic conditions.

About a year ago, following five years of observation, Hilgenfeldt reported a study of renal mobility. He took pyelograms in both the prone and the upright position, in deep inspiration and expiration in the prone

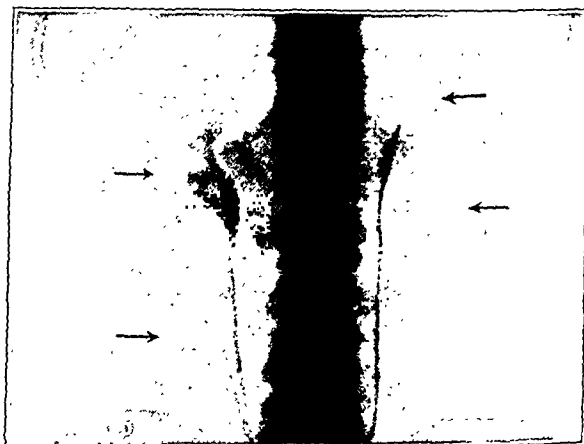


Fig. 1 (case 1).—Excessive respiratory mobility. Both kidneys within normal limits.

position, and studied the variations in kidney position under various types of pathologic conditions. These observations have often been extremely helpful in diagnosing obscure lesions involving pathologic changes in and around the kidney.

About a year ago Dr. Ralph Bacon, who with his associate Dr. B. Swayne Putts does all the roentgenologic work in the urologic department at St. Vincent's Hospital, suggested an inspiration and expiration pyelogram on the same film in the study of some of our difficult diagnostic problems. He had become convinced of the value of such a study after several years of close cooperation with the urologic service and suggested to me that such an extra pyelogram might be of great value in our work. On my recalling to him Mathé's earlier work on the postural movement of the kidney, he began to search the literature for any light that it might give us on this subject. He found that Chevassu in 1933 reported a case of perinephric infection in which during fluoroscopy he was satisfied that the contrast filled kidney pelvis appeared absolutely motionless during deep inhalation, that Mathé had demonstrated lack of renal mobility in perinephric

President's address, read before the Section on Urology, Pan American Medical Association, Havana, Cuba, Jan. 17, 1938.

infection, and that Hilgenfeldt had written his comprehensive report. Other than this the literature had little to offer with the exception of a report by myself given in a discussion before this society in July 1931 on renal sympathectomy at Mexico City. At this time I mentioned that the pyelogram taken in inspiration and expiration would demonstrate the nonfixation of the normal kidney and that after the sympathectomy, because of adhesions between the capsule and Gerota's fascia, the kidney could be placed in whatever position the operator desired. These facts had been demonstrated by pyelography:

In movable kidneys as well as in others, after operation, the kidney will be found to be fixed in a fairly high position by the surrounding adhesions. There will be practically no mobility and the ureter will be found straight and upon checking in the sitting or upright position the kidney will not descend nor will the ureter kink. As a matter of fact, if the kidney descends several inches before the adhesions form, and becomes fixed in a low position, it will no longer give symptoms. It does not matter really just where the kidney becomes fixed postoperatively just so it is fixed and its ureter is straight and not kinked.

It is plainly evident that renal mobility has not been given the consideration in the study of urologic problems that it justly deserves. The kidneys are loosely fixed by vascular pedicles, aberrant vessels, fascias, fatty beds and intra-abdominal pressures and are therefore rather freely movable under normal conditions. Posture always causes definite changes in their positions. Breathing has a distinct bearing on their mobility, both in the upright and in the prone positions. Various intraperitoneal and extraperitoneal pathologic conditions will have a direct bearing not only on the position of the organs but on their mobility as well. Thoracic disease will likewise influence both position and mobility. Pathologic and congenital abnormalities of the kidneys themselves will influence to a marked degree both position and movability. Anything that can establish a normal position and normal movements of the organs, together with comparison studies of abnormal positions and movements, must be an aid in diagnosis and will be a distinct help in the planning of any surgical procedure contemplated.

I have been interested in the study of renal position and mobility for years and, as more and more opportunity has been afforded for the study of these phenomena, definite conclusions have become logically evident. Many of these will of necessity have to be modified as time goes on and more experience is gained, but a review of some personal experiences may at this time prove stimulating.

RESPIRATION PYELOGRAPHY

Dr. Bacon has coined the word "respiration pyelography" and I am now using it more or less as a routine, particularly when I have a patient who will intelligently cooperate.

TECHNIC

With the catheters in place we first take a plain roentgenogram followed by a plain pyelogram with the patient simply holding his breath, after which we use a third film with a fast cassette. The patient is now instructed to take a long breath and hold it and the first exposure is made. The patient then is instructed to exhale completely and remain quiet while the second exposure is made on the same plate. These pyelograms are all made in the prone position.

First I wish to discuss normal respiration pyelography. The one striking feature about these cases is the

apparent kinking of the normal ureter in deep inspiration and the occasional movement that takes place laterally in pyelograms that we consider normal. It must be remembered that a urogram that shows a kink in the ureter with normal pyelographic shadowing and cupping must be interpreted as a kink only after it is known whether the pyelogram was made in deep inspiration or expiration. I think these pyelograms show the necessity for great care in the interpretation of ureteral kinks. Surely a respiration pyelogram will quickly show whether these tortuosities have any real pathologic significance.

The diaphragm should move normally when deductions are made of renal mobility and fixation. If the diaphragm is immobilized by intrathoracic or by pararenal pathologic conditions, the kidney will not move in respiration. If for any reason it becomes necessary to section any nerves such as the intercostal groups, if thoracoplasty is necessary or vagus nerve injuries are

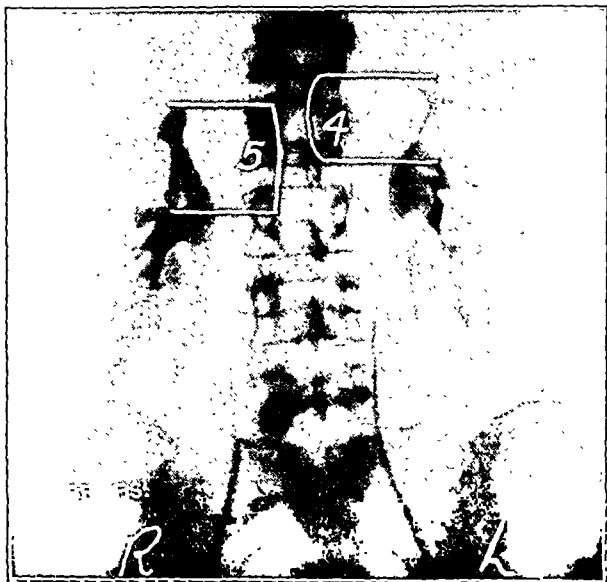


Fig. 2 (case 4).—Normal renal mobility.

encountered, these of course will all influence renal mobility because of the paralysis of the diaphragm.

According to Hilgenfeldt, kidney displacement is not entirely dependent on the movement of the overlying diaphragm but depends somewhat on the abdominal muscles, the opposite diaphragm and the attachments of the prerenal fascia to the duodenum and colon. As these organs move with the diaphragm the ureteral attachment to the postparietal peritoneum several centimeters below the renal pelvis may likewise be influenced by the movement of these structures. Therefore a fluoroscopic study of the diaphragmatic movements in inspiration and expiration is essential.

RESPIRATION PYELOGRAPHY SHOWING NORMAL MOBILITY OF THE KIDNEYS

CASE 1.—C. D., a woman, aged 42, admitted to the urologic department at St. Vincent's Hospital Dec. 7, 1937, complained of pain in the left lower abdominal quadrant. Pus cells were found in the urine. She had a stricture of the lower left ureter which might be spastic and not inflammatory in character. Cultures from the left kidney yielded a staphylococcus.

Normal pyelograms showed some blunting of the calices on the right side, although this was symptomless and normal. Every picture showed spasticity of the right renal pelvis.

A respiration pyelogram showed normal mobility of the right kidney and considerable mobility of the left kidney with some definite lateral movement. This picture (fig. 1) is shown to point out two facts: first, that, if a picture is taken in deep inspiration, what is normally thought to be a ptotic kidney might prove to be a perfectly normal kidney if taken in deep expiration; second, to show also the marked normal motion in deep respiration of a reasonable normal organ.

CASE 2.—M. A. G., a woman, aged 32, admitted Dec. 13, 1937, gave a history of pain in the right side typical of renal colic, with slight bladder disturbances on voiding. The pain was sufficiently severe to require severe hypodermics. There was no history of menstrual disturbances or vaginal bleeding. The preoperative diagnosis was calculus, right ureter.

Pyelograms by Dr. Putts did not reveal any calculi. The right pyelogram gave a normal picture. The left pyelogram showed a smaller pelvis with calices and their terminals changed, suggesting a chronic infection. Tuberculosis had to be considered. Both kidneys were prolapsed 2 inches. The ureters in the pelvis appeared pushed outward, more than normal, probably because of the soft tissue mass noted.

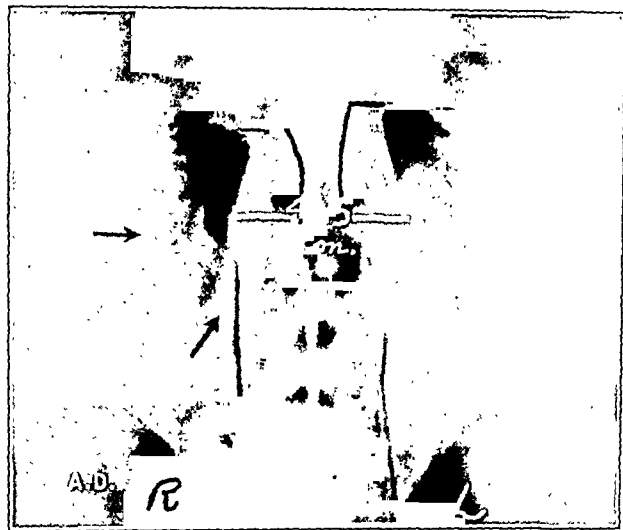


Fig. 3 (case 10).—Normal renal mobility probably demonstrating an aberrant vessel.

There was a definite obstruction in the lower right ureter. Pelvic examination revealed a mass irregularly nodular and immovable, filling the entire pelvis.

The final diagnosis was inoperable carcinoma of the pelvic organs with beginning obstruction to the right ureter from the mass.

Respiration pyelograms showed considerable movement and fairly normal kidneys.

CASE 3.—W. B., a man, aged 42, an outpatient, admitted to the urologic department at St. Vincent's Hospital July 22, 1937, had a bad stricture of the urethra with some dilatation of the posterior urethra and hypertrophied dilatation of the bladder. A normal pyelogram was made which was essentially negative. A respiration pyelogram was made which showed normal mobility on both sides without any dilatation of the upper urinary tract from the stricture.

CASE 4.—Sr. F. X. came to the hospital Nov. 8, 1937, with the diagnosis of possible tuberculous nephritis. For some time organisms resembling the tubercle bacillus had been found in the specimens of urine, although she had never had any direct symptoms. Examination revealed fairly normal kidneys and a normal bladder. A respiration pyelogram (fig. 2) showed normal motion. The organism diagnosed as the tubercle bacillus was later identified as the smegma bacillus.

CASE 5.—R. S., a woman, aged 32, admitted July 12, 1937, complained chiefly of frequency and urgency of urination and pain in the left part of the back. Cultures of urine from the

left kidney yielded a colon bacillus; from the right kidney no culture. A diagnosis of left pyelonephritis with some nephrosis was made. The respiration pyelogram showed bilateral motion on both sides, which was considered virtually normal.

CASE 6.—M. M., a woman, was admitted July 20, 1937, with the diagnosis of bilateral pyelonephritis with normal movement.

Pyelograms by Dr. Bacon did not reveal opaque calculi. The pyelograms appeared normal except for a slight nephrotic change on the left side.

CASE 7.—M. S., a woman, aged 38, was admitted July 20, 1937, with the diagnosis of bilateral pyelonephritis, more marked on the right side.

Pyelograms by Dr. Bacon revealed no evidence of opaque calculi. The pyelograms appeared approximately normal.

A respiration pyelogram revealed normal movement.

CASE 8.—J. S., a man, aged 37, admitted Aug. 2, 1937, complained of smarting and burning in the rectum and penis. Three large stones were found in the bladder.

Pyelograms by Dr. Putts revealed three calculus-like shadows in the bladder region. The right pyelogram was normal. Slight dilatation was noted in the pelvis of the left kidney. The calices were also slightly changed, so that some nephrosis was indicated.

A respiration pyelogram was essentially negative with normal movement.

CASE 9.—C. M., a man, aged 47, admitted July 14, 1937, had bloody urine and pain in the left hypogastrium and the left loin. The diagnosis was bilateral pyelonephritis.

Pyelograms by Dr. Putts did not reveal any calculi. The pyelograms were approximately normal.

A respiration pyelogram revealed normal renal movement.

I have selected this series of cases which demonstrate the normal movement of the kidneys in deep inspiration and deep expiration and which show that there was no perirenal or pararenal pathologic condition and that if there was it had not involved the capsule of the kidney or the fascia about the pelvis and the ureter. Several of these cases, however, have been diagnosed as bilateral pyelonephritis but the inflammatory condition is limited to the kidney itself.

RESPIRATION PYELOGRAPHY AS CONCERNS ABERRANT VESSELS

If an aberrant vessel to the lower pole of a kidney is the cause of a nephrosis, or if bands in the periureteral fascia are the cause of kinks at the ureteropelvic junction, a respiration pyelogram should be of considerable value in helping to make the diagnosis.

CASE 10.—A. D., a woman, aged 28, admitted July 19, 1937, complained chiefly of intermittent pain in the right side with considerable functional bladder disturbance. Cultures from both kidneys yielded colon bacilli. The cystoscopic and pyelographic diagnosis was right hydronephrosis, probably due to an aberrant vessel causing a constriction at the ureteropelvic junction on the right side.

A respiration pyelogram (fig. 3) seemed to emphasize this kink, although there was plenty of motion in the kidney and a kink also appeared on the left side during deep inspiration, although it was completely obliterated during expiration. It was believed that the possible limitation of motion of the right side as compared to that of the left may be accounted for by an aberrant vessel. This, it was considered, might not be an aberrant vessel but might be due also to fibrous bands. Operation was not performed.

Careful study of this pyelogram will show that the kink at the ureteropelvic junction is very much emphasized on deep inspiration, although the kidney moves virtually normally in the respiration pyelogram. It is my belief that in this case we are dealing with an aberrant vessel, although the patient has not come to operation for verification of that diagnosis.

Where infections such as carbuncles, multiple cortical abscesses and other lesions which extend from the parenchyma of the kidney to the capsule and through the capsule are found, there will be a definite limitation of motion on the affected side as compared to that of its fellow. This is ably demonstrated by case 11:

CASE 11.—H. R., a man, aged 69, was admitted Nov. 20, 1937, with a history of recurrent attacks of severe right-sided loin pain and some hematuria.

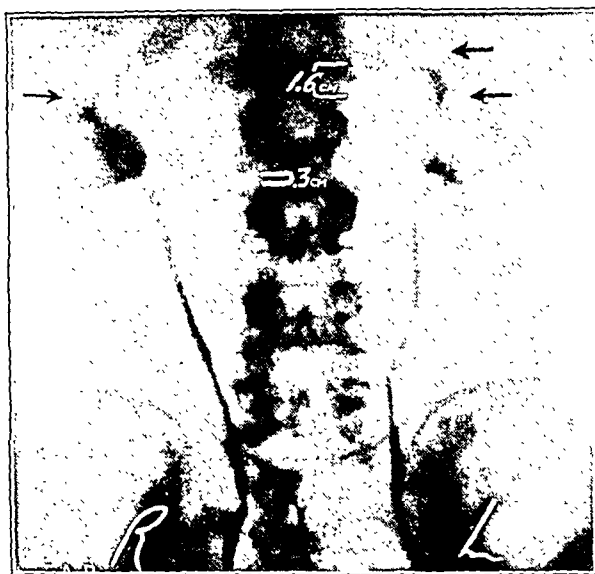


Fig. 4 (case 12).—Perinephric abscess behind and above kidney

Pyelograms revealed no evidence of calculi. The left pyelogram was approximately normal. The pelvis and calices on the right side together with the upper end of the ureter were somewhat changed, almost lead-pipe in type. An area of destruction was noted in and beyond the median calix and in the upper outer part of the inferior calix. The appearances suggested a destructive lesion which would be best explained by neoplasm or infection, most likely tuberculous.

A respiration pyelogram was made showing fairly normal movement of the left kidney, while the right moved probably 60 per cent of normal. Fluoroscopy showed that the diaphragms moved freely. The urologic opinion on this case was that there was a chronic inflammatory disease of the kidney, probably tuberculous, although neoplasm could not be ruled out. As a result of what we consider a partial limitation of motion it was considered that this kidney had some perirenal inflammatory adhesions more or less fixing it. At operation the presence of marked perirenal adhesions was noted and the condition in the kidney was neither tuberculous nor neoplastic but was due to a badly infected infarct.

This fixation is further exemplified by perirenal abscess formation. Whether the perirenal abscess is caused by a coalescence of cortical abscesses extending through the capsule into the perinephric fat or whether it is caused by emboli of organisms in the vessels of the perirenal fat and is primary there is of little moment.

In these cases the diagnosis may be made fairly early. The diaphragm will not be limited in its motion but the kidney will be as soon as the infection fixes the capsule of the kidney to Gerota's fascia, or as soon as the kidney is immobilized by an abscess within Gerota's fascia. This is beautifully demonstrated by case 12:

CASE 12.—A. P., a man, aged 36, admitted to the urologic department at St. Vincent's Hospital Dec. 7, 1937, had been in the hospital for a considerable time with an undiagnosed

septic condition. He was transferred to the urologic service for check-up and survey. Cultures from the urine of the right kidney yielded the staphylococcus.

Pyelograms revealed no opaque calculi. The right psoas shadow was obliterated and the renal shadow on this side could not be made out. The pyelogram on the left was normal. The pyelogram on the right showed evidence of slight nephrosis. The pelvis on the left side was 5 cm. from the midline; on the right side it was 7 cm. away and had the appearance of being depressed along its upper surface. Similarly the hepatic flexure of the colon was displaced inward and downward. Slight haziness overlay the entire upper right quadrant. Fluoroscopy of the diaphragm showed that both sides moved slightly but within normal limits.

Respiration pyelography by Dr. Bacon (fig. 4) showed that the left kidney moved downward 1.6 cm. during the respiratory phase. The right kidney moved downward 0.3 cm. and outward about the same distance. This lack of craniocaudal movement is indicative of a perinephric infection on the right, behind and above the kidney.

It will be noted that the diaphragms move freely but that the kidney is anchored in position as a result of the collection of pus within Gerota's fascia. The large colon can be seen pushed toward the midline.

In contradistinction to the diagnostic information that can be obtained from a respiration pyelogram in perinephric abscess are the findings of a paranephric collection of pus. In the subdiaphragmatic collections of pus the diaphragm is fixed; therefore there is no motion of the kidney in the respiratory pyelogram, either laterally or up or down. This is a splendid differential diagnostic point and the following case demonstrates this:

CASE 13.—M. L., a girl, aged 15, admitted to the urologic department Nov. 11, 1937, had been in the hospital for a considerable period with an undiagnosed elevation of temperature. A pararenal abscess was finally considered as the diagnosis.

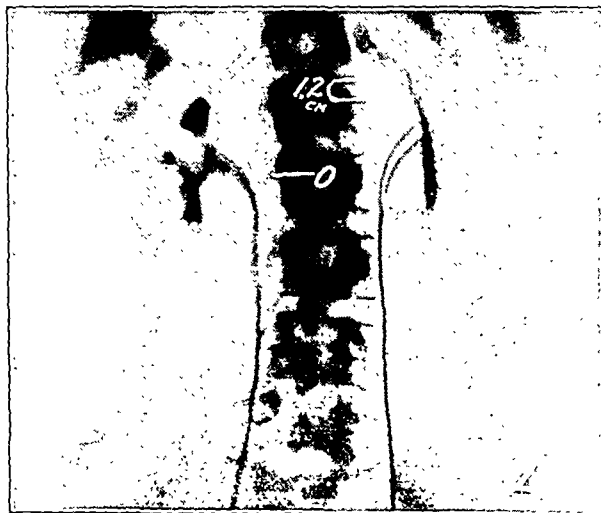


Fig. 5 (case 13).—Subdiaphragmatic abscess. Diaphragm does not move. Kidney does not move.

Pyelograms revealed no evidence of opaque calculi. Slight blunting of the superior minor calix was present in the right kidney. The pyelograms were otherwise normal.

A respiration pyelogram (fig. 5) by Dr. Bacon demonstrated 1 cm. of motion of the left kidney and no motion of the right kidney. The lack of motion of the right kidney was ascribed to the previously described immobilization of the right diaphragm, which had been present throughout the weeks of study.

On several occasions prior to the urologic study the right diaphragm had been completely immobilized. Owing to the fact that the right kidney did not move in either inspiration or expiration and the fact that the right diaphragm likewise did not move, it was considered that movement of the kidney was not due necessarily to perinephric pus or adhesions but that in all probability it was due to paranephric pus.

The final diagnosis was subdiaphragmatic abscess.

Hilgenfeldt calls attention to the value of postural and respiration pyelography for the localization of foreign bodies, such as calculi in the kidney pelvis and ureter. However, under ordinary circumstances this localization can be made by simple pyelography, although confirmation of the deductions will be more accurate if the respiration pyelogram is used.

Bacon, working with us and in ignorance of both the work of Hilgenfeldt and Mathé, says:

My interest in the problem was initiated nearly a year ago by a case in which I was able to demonstrate fluoroscopically absolute lack of motion of the posterior half of the inferior margin of the liver in a male patient, 7 years of age, who was

ing is largely diaphragmatic or costal; the length of the renal pedicle may play a part. The mobility of the two kidneys is not necessarily the same. It follows that diaphragmatic motion must be normal in order to judge kidney mobility by respiration pyelography.

At the time he wrote this there had been no case of paranephric infection available for this study but since then we have had a case.

Bacon further says:

However, other conditions may cause perirenal fixation. In his perirenal sympathectomy for painful nephroptosis, Hess dissects the kidney free from the fascia, removes the nerve and lymphatic tissues from about the kidney pedicle and strips the ureters clean. He then replaces the kidney in its normal fossa but does not do nephropexy. In studying four of his patients who have been thus operated on, we have demonstrated complete immobility of the postoperative kidney in three and partial fixation in the fourth patient. Our explanation is that adhesions about the pedicle and particularly between the capsule and perirenal fascia are responsible for this fixation.

RESPIRATION PYELOGRAPHY AS A CHECK-UP ON RENAL POSITION AND MOBILITY AFTER SYMPATHECTOMY FOR OPERATIVE RELIEF OF PTOTIC KIDNEYS

When after careful study we decide that the patient is a proper subject for surgical procedure because of renal ptosis, we always do a renal sympathectomy without decapsulation and without making any attempt to do any of the operative procedures which would class the operation as a nephropexy. A review of several of our papers will explain our reasons for not doing a nephropexy.

CASE 14.—H. C., a man, admitted Sept. 25, 1937, had a right sympathectomy March 2, 1937, for pain in his right side, which was diagnosed as a nephroptotic kidney giving symptoms.

A pyelogram by Dr. Putts revealed no calculi. Part of the right twelfth rib had been removed. Double pyelograms on deep inspiration and expiration showed that movement of the right pyelogram was 1.5 cm. and 5.5 cm. on the left side. The right diaphragm had moved 3.5 cm., while the left diaphragm had moved about 1.5 cm. Pyelograms appeared approximately normal.

There was very slight up and down movement in the respiration pyelogram on the sympathectomized side and a very marked difference on the left side.

CASE 15.—E. H., a woman, aged 24, was admitted Aug. 30, 1937, for a check-up following a renal sympathectomy on the right kidney done about two months previously. She had a definite nephroptosis causing symptoms sufficient to warrant operation. She had been under observation for about eighteen months prior to operation and we felt justified in attempting to correct the ptosis in this organ. The x-ray report prior to operation was right kidney 2 inches below its usual position with a very tortuous ureter. A pyelogram was approximately normal.

A respiration pyelogram showed the kidney fixed high in the renal fossa with a straight ureter with no up and down motion during deep inspiration and deep expiration but a slight lateral motion. The patient was completely relieved of her symptoms.

CASE 16.—F. S., a woman, aged 32, admitted Sept. 1, 1937, had had constant severe right-sided renal pain. She had been admitted to the hospital on several occasions during the past four years, with a diagnosis of right nephroptosis causing symptoms. She received complete relief from her right nephroptosis when she wore a proper supporting garment. However, she finally decided that she would rather be operated on. The operation done some six months prior to the present study consisted of a simple periaarterial sympathectomy with ureterolysis.



Fig. 6 (case 16).—Renal sympathectomy.

admitted to the hospital with complaints of three weeks' duration: fatigue, lassitude, afternoon temperature rise, and slight pain in the right lumbar region. White blood cells on admission, 26,500.

Roentgen study on Nov. 7, 1936, showed a liver shadow enlargement on the right side with slight diaphragmatic elevation; diaphragmatic motion was normal. During fluoroscopy, the lower margin of the liver stood out sharply; the posterior half exhibited no motion on respiration. Because of these findings plus the clinical evidence, a tentative diagnosis was hazarded of a disease process involving the posterior inferior surface of the liver.

Operative findings: An upper pole perinephric abscess.

Because of this case he studied the mobility of the kidney in extremes of expiration and inspiration in our clinic. We have cooperated with him much to our satisfaction in the diagnosis of many of our difficult problems.

He says again:

After the kidney pelvis is filled with contrast material, preferably by retrograde pyelography, a film is exposed twice, once on deep inspiration and once on forced expiration. The normal pelvis therefore casts two shadows and the distance between them represents the normal respiratory excursion in the horizontal posture. The average is 3.7 cm. but there may be considerable variation depending primarily on whether breath-

The respiration pyelogram done September 1 (fig. 6) showed the normal movement of the left kidney and distinctly showed the high position of the right kidney with a slight lateral movement on deep inspiration and deep expiration. There was no up and down motion.

COMMENT

In all these cases I would call attention to the straightness of the ureter, the high position of these kidneys and the lack of mobility of the organ that has been operated on as demonstrated by respiration urography, comparing its movement with that of the opposite kidney. There is only a slight up and down motion but there is a distinct lateral motion to the sympathetomized kidney.

I have not made the slightest attempt to hook the ptotic kidney to a rib or to fashion any other type of nephropexy support for the kidney, nor to decapsulate it. The sole procedure has been a periarterial sympathectomy with ureterolysis, extending as far into the pelvis as possible. I wish also to call attention to the fact that there has been no increase in any nephrosis that may have been present prior to operation, but that in some cases there seems to be a distinct return to the normal tonicity of the pelvis and ureter as evidenced by pyelography.

I used to make a hammock of the fascia after the technic of Deming in these cases; I used to decapsulate the kidney and I used to do nephropexy, but I think the demonstration that I have presented will prove beyond any question of doubt that it is not necessary to do any fastening by any technic on the operated organ high in the renal fossa; and I do not believe that I need any more conclusive proof that these extra procedures are unnecessary than the demonstration which I have just given. Nephropexy of any type, decapsulation and hammocking all add to the length of the operative procedure and have a tendency to destroy some renal substance, and decapsulation will at times prove a boomerang to the efficiency of the kidney later on. This has, I think, been proved by Rolnick in his recent work on the renal capsule.

In 1924 I advocated periarterial renal sympathectomy for nephroptosis. Based on my experiences in a great number of operative procedures on ptotic kidneys, I now feel that I can offer the profession the simplest efficient technic for the operative control of the ptotic kidney requiring surgical intervention.

Prior to 1930 the position and mobility of the kidney had been studied in our clinic by taking separate pyelograms in deep inspiration and expiration to check our work and results in ptotic kidneys on which sympathectomies had been done.

Hilgenfeldt's studies in the last six years, reported a year ago, have verified all my observations, and he has further used the procedure in the diagnosis of the localization of foreign bodies, for the recognition and differentiation of inflammatory diseases of the kidney and adjacent tissues, for paranephric abscess, kidney carbuncle and pyelonephritis, and the association of kidney location to inflammatory diseases in adjacent tissues, such as pancreatitis, appendicitis and tuberculosis.

Mathé should be given credit for his postural studies of kidney mobility in the diagnosis of perirenal infections.

Further study by respiration pyelography with operative verification of the results will more completely establish the value of the procedure.

CONCLUSIONS

1. Respiration pyelography should be used for the verification of the results on the kidney obtained after operative measures planned for kidney fixation.

2. The technic is simple and inexpensive.

3. Many problems of a clinical nature will be more easily solved and our knowledge of the normal and abnormal mobility of the kidney in both health and disease will be increased by the observations of those who adopt respiration pyelography as a routine procedure in their urologic diagnostic work.

8 East Twelfth Street.

INTERSEXUALITY

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AND

WILLIAM SAPHIR, M.D.

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The mechanism that normally governs the differentiation of the two sexes is not fully understood. It is accepted, however, that the sex of the individual is determined at the time of fertilization.¹ The union of maternal and paternal cells is considered the determining factor in the development from the embryonic bisexual "anlage" into either ovaries or testicles under the guide of the endocrine system. If such normal development—for reasons entirely unknown to us—is disturbed during any time of the embryonic life, one encounters as the product of such faulty development the anatomic picture of the intersex.

It is not intended here to enter into a review of the voluminous literature, which since von Neugebauer's² fundamental work in 1908 has increased steadily, but to refer briefly to a few communications pertinent to this study. A convenient review of the newer literature may be found in the recent publication by Huggins, Cohen and Harden.³

In this paper we present a case of intersex that was closely studied clinically, physiologically and psychologically. We report the case not only for its rarity but also because we believe that some facts of interest were found that may clarify this syndrome more definitely and may be helpful in recognizing milder grades of similar clinical manifestations.

REPORT OF CASE

History.—Miss V. D., aged 39, admitted to the Michael Reese Hospital Nov. 9, 1936, had never been sick before. The family history was irrelevant. The patient stated that, since the age of 12, increasing hair growth, deepening of the voice and conversion of the external genitalia to the present stage had gradually developed. She never had menstruated but had had two vaginal bleedings of two hours' duration at the ages of 17 and 20. In association with these progressing bodily changes marked sexual desire toward the male sex developed. In an attempt to satisfy this desire she masturbated a great deal. The patient sought medical attention for relief from the annoying libido, which precluded sleep and ability to work.

Examination (abbreviated).—The patient was well built and well nourished with a dark complexion and a fairly heavy growth of hair on both cheeks, the upper lip and chin, partly

From the Gynecological and Medical Department of the Michael Reese Hospital.

1. Allen, Edgar: *Sex and Internal Secretions*, Baltimore, Williams & Wilkins Company, 1932.

2. von Neugebauer, F. L.: *Hermaphroditismus beim Menschen*, Leipzig, Dr. Werner Klinkhardt, 1908.

3. Huggins, R. R.; Cohen, Mortimer, and Harden, Boyd: *True Hermaphroditism in Man with an Endocrinologic Study*, *Am. J. Obst. & Gynec.* 34: 136 (July) 1937.

removed, with scar formation, by electrolysis. There was a virile hair distribution of the body. The voice was harsh but neither masculine nor feminine. The breasts were flat, the nipples were atrophic and no glandular mammary tissue was palpable. The external genitalia are shown in figures 1 and 2. The right labium was of considerable size and resembled a scrotum, in which an apparently normal testicle was felt. The left labium appeared smaller. In the left upper labium and inguinal



Fig. 1.—Genital structures: hypospadic penis, and rudimentary vagina between scrotal sacs.

region a similar smaller testicle was palpable. The clitoris had the distinct appearance of a penis 4 cm. long with prepuce, preputial sac and smegma present but no urethral orifice in the glans. The introitus vaginae was 0.75 cm. below the rudimentary penis, flanked by rudimentary labia minora, 1.5 cm. deep and funnel shaped, in the upper portion of which the urethral orifice was found. This structure secreted abundant mucus. On rectal examination a small structure at the neck of the bladder resembling a prostate was palpable, but neither uterus nor adnexa were felt; there was no mass palpable and no uterus or adnexal structures. Physical examination otherwise was negative.

Laboratory examination revealed that the urine, blood count, and chemistry of the blood were normal; the Wassermann reaction was negative. The blood pressure was 108 systolic, 70 diastolic. The sugar tolerance after 100 Gm. of dextrose orally was: fasting 82, one-half hour 192, one hour 177, two hours 170, three hours 81. The metabolic rate was 9 plus. Quantitative titration of the urine for gonadotropic substance revealed an excretion of 333 mouse units per liter by the Zondek alcohol precipitation method.⁴ There was no increased excretion of estrogen as judged by a negative Allen Doisy test with 6 cc. of urine.

The x-ray examination (transabdominal pneumoperitoneum) revealed that the pelvis was small and of the male type. There was no radiologic evidence of internal female genitalia.

Psychiatric Examination (by Dr. Jacob Kasanin,⁵ November 10).—"The patient was well built, well nourished and middle aged with decidedly masculine features, dark complexion and evidences of a fairly heavy growth on both cheeks, which has

been controlled by various depilatory methods and electrolysis. In manner, however, the patient was very feminine, pleasant, gracious, sweet and at times rather coy and somewhat coquettish. She spoke rapidly but clearly. She frequently interrupted her speech by laughter, gesticulated freely, and at times would become quite emotional, and one was given the impression of a somewhat masculine girl or an extremely effeminate man. The voice was rather harsh, but one could not state definitely whether it was masculine or feminine.

"The patient stated that she was born in a small village on a farm, the oldest of five children. Her father kept an apiary and was a fairly prosperous farmer. The mother was kind and sweet and liked the patient very much. Both parents, however, paid very little attention to the children. The patient stated that she was a quiet, sweet, obedient child; she was so good that her mother thought she would become a nun. She played with girls, liked to play with dolls and in every respect was a typical girl. She went to public school, which she completed at the age of 14. At 17 she entered a teacher's seminary. Shortly after this she discovered her physical anomaly and ran away from home. She consulted a specialist, who advised her to wait a few years until it became clearer what her sex was. Meanwhile, the war broke out and the patient entered a hospital as an attendant. She stated that she remained in the hospital several years, until the war was over, and then taught school for three years. For a time she clerked in stores.

"In 1926 the patient came to Chicago and since then has worked as a salesgirl in one of the large department stores.

"The patient stated that at the age of 13 she fell in love with a very good looking boy in her class; he courted her a good deal and brought her cakes and sweets to school and carried her books. The patient was never aware that she was different from other girls until she was 17, when she began to go swimming with other girls. While undressing she had a chance to see other girls and saw that she was different. She became extremely furious with her mother 'because she bore me like that,' so she ran away from home and has never been home since. She changed her name and came, under this assumed



Fig. 2.—Prepared for operation, showing vaginal orifice.

name, to the city. Her parents died without seeing her. She never maintained contact with her family, but she heard about them from time to time through a mutual friend.

"When she was in the hospital during the war, she had many light flirtations with soldiers and officers. They frequently excited her, but she never had intercourse, not because she did not want to but because she was afraid they would discover that she was not like other girls. The patient stated that she 'misstruated' twice in her life. Once when she was 17 she 'found

4. Zondek, Bernhard: *Die Hormone des Ovarium und des Hypophysenvorderlappens*, Berlin, Julius Springer, 1931.

5. Dr. Kasanin is director of the Department of Psychiatry, Michael Reese Hospital.

her undergarments saturated with blood,' and then again when she was 20. She stated that she had a penis which was about half the size of a man's penis and protruded from the lower part of the abdomen. She stated that it never showed any activity and that no matter how much she was excited sexually she never had an erection. She tried to induce erection in the penis by masturbating and handling it in every possible way, but without success. She had a great deal of erotic feeling under the penis, 'where the water comes from,' and she was so aroused sexually that she could sleep only two or three hours a night. In order to relieve sex tension she masturbated frequently by massaging the region around the urethra.

"Since the patient has come to the city she has been very popular with men, has frequent dates and is widely known in her set. She goes out very often, dances a great deal and goes in for heavy petting with many men but has never allowed herself to have intercourse for fear of being discovered. The patient maintained that the penis and the two little glands in her groin were a nuisance and that she wanted them to be removed so that she could be a perfect woman. At the present time she is engaged to a man ten years older and he wants to marry her as soon as possible. She does not care to have any children, but she would like to have a normal sex life and, most of all, relief from sex tension through normal intercourse.

"The patient is an intelligent person with a masculine physique and appearance but is very feminine in her manner, so that one has the impression of a somewhat masculine girl. She shows an excellent appreciation of her problems, with good judgment, and her whole psychology seems to be entirely feminine, at least from the rather superficial contact with the examiner."

The foregoing examinations left little doubt as to the diagnosis of intersexuality. The presence of testicles implied the diagnosis of masculine pseudohermaphroditism. Since the patient had been brought up to be a woman, very much desired to be a woman and felt very unhappy about her masculine anatomic manifestations, we felt justified in performing a plastic operation to enlarge the rudimentary vagina and remove the penis and testicles. While complete restoration of masculinity in a case of intersex after removal of female organs has been reported,⁶ we did not hope a priori for restoration of female sex characteristics, because of the apparent absence of ovaries as determined by palpation and the x-ray appearance of the peritoneum. For that reason we concluded that laparotomy for diagnostic purposes was unjustified. The considerably increased excretion of gonadotropic substance furthermore seemed to indicate gonadal insufficiency and thus to exclude functioning ovaries. In that respect our case resembled the case of Novak,⁷ who found testicles intraperitoneally but no ovaries.

Operation (Dr. Rubovits).—Castration and amputation of the penis were easily accomplished by the simple technic employed for these operations. The rudimentary vagina was enlarged by invading the vesicorectal space up to the peritoneum. This area was then packed, with the hope that epithelization would occur. Daily digital and instrumental dilations were partly successful in maintaining a sexually serviceable vagina.

Microscopic Examination (Dr. Otto Saphir).—Sections of the soft globular masses stained with hematoxylin and eosin (fig. 3) revealed partially or completely hyalinized seminiferous tubuli showing no evidence of spermatogenesis. Scattered throughout or massed in the interstitial tissue were hypertrophic Leydig cells. Sections of the coiled peripheral structures revealed epididymis and vas deferens; of the columnar structure connective tissue containing endothelial lined spaces, smooth muscles and nerve fibers and tactile corpuscles, the whole simulating erectile tissue.

The patient made an uneventful recovery. While there were no striking changes in appearance as to masculine features, the breasts became fuller and somewhat enlarged. The patient expressed her gratification and is especially grateful for the

marked diminution of libido, which has made it possible for her to discontinue masturbation and resume her normal occupation.

COMMENT

It appears from the foregoing that we were dealing with a form of intersex which may be classified according to the older nomenclature as pseudohermaphroditism masculinus. Although a laparotomy was not performed and thus the absence of ovaries was not definitely established, this diagnosis would hold true even if some rudimentary ovaries were present, for the presence of both ovaries and testicles in one individual cannot be called true hermaphroditism unless there is definite evidence of gonadal function, such as the presence of both ova and spermatozoa. Our microscopic evidence of testicular tubular atrophy and absence of spermatogenesis is enough to rule out the diagnosis of



Fig. 3.—Section of testes showing atrophy of seminiferous tubuli and marked interstitial hypertrophy.

true hermaphroditism and to confirm again the fact that true hermaphroditism never has been found in man.

Our case offers several facts of interest. There is the psychosexual aspect. Here is a patient with masculine intersex, brought up to be a woman, suffering from intense libido toward the male sex and masturbation. The question arises whether sexual desire is a manifestation rather of environmental influences than of gonadal function. The fact that sexual tension was relieved by orchidectomy could be evaluated in favor of the assumption that the gonads are responsible for sexual desire even if expressed toward the same sex. The common embryonic origin of ovaries and testes, the near chemical relationship of androgenic and estrogenic substances, which are found excreted by both males and females, and the favorable effects of castration in homosexuality are factors that would interpret libido as a specific manifestation of gonadal activity, no matter

6. Wolf, C.: Ein Fall von Hermaphroditismus verus (lateralis), *Endokrinologie* 15: 225-232 (April) 1935.

7. Novak, Emil: Sex Determination, Sex Differentiation and Intersexuality, with Report of Unusual Case, *J. A. M. A.* 105: 413 (Aug. 10) 1935.

toward which sex they are expressed and no matter as to the environmental influences.

Our case, furthermore, offers interesting features as to the problem of heterosexual manifestations. The marked hypertrichosis and hirsutism, the low voice and flat breasts and the virile pelvis doubtless are secondary sex stigmas due to the presence of male generative organs. Interstitial testicular function, which is considered responsible for the secondary sex characteristics, apparently was not disturbed in our patient in spite of the marked tubular atrophy and absence of spermatogenesis. This, in fact, is not surprising as ligation of the spermatic cord, which will produce testicular tubular atrophy and artificial azoospermia, is known to be followed by an increase of testicular interstitial activity both histologically and physiologically; interstitial hypertrophy, indeed, was very marked in our case, as evidenced histologically. We therefore may rightfully assume that the interstitial testicular function was not disturbed in our case.

How are physicians to consider those mild heterosexual symptoms in women encountered so frequently in everyday practice? There are apparently normal women with normal sex life who have borne several children and yet offer in varying degrees such virile features as hypertrichosis, male distribution of hair, male bony pelvis, flat atrophic breasts and deep voice. No satisfactory explanation can be given at present for that phenomenon. Recently Koch and his associates⁸ found that women with hypertrichosis and virilism were excreting considerably more androgenic substance than normal women. Such observations would point to an etiologic relationship between virilism in women and increased androgen production. The source of such production may theoretically be any derivative of the embryonic genital ridge, such as gonads or the adrenal cortex (interrenalism) either in situ or misplaced.⁹ It may well be conceivable that the presence of such aberrant or misplaced embryonic testicular tissue in women may give rise to a quantitative imbalance of gonadal hormone production and to the appearance of heterosexual symptoms.

Titration for gonadal factors has not yet been adequately undertaken in such cases. It seems, however, more than a coincidence that those manifestations known in the literature as adrenal virilism, Archard-Thier's syndrome, Cushing's syndrome and arrhenoblastoma ovarii always show involvement of either gonads or the adrenal cortex and always are characterized by marked heterosexual symptoms.

It is to be hoped that further studies of this kind may throw some light on the etiology of heretofore unrecognized mild forms of intersexuality in women.

SUMMARY AND CONCLUSION

1. Intersexuality is the anatomic manifestation of a disturbance in the mechanism responsible for the differentiation of the sex.

2. In a case of "female" intersex in which the patient had two testes and a small hypospadiac penis and secondary male sex characteristics, intense libido toward the male sex was relieved by orchidectomy.

8. Koch, F. C.: Recent Studies on the Excretion of Male Sex Hormones in Man, *Ann. Int. Med.* 11: 279 (Aug.) 1937. Koch, F. C.; Gallagher, T. F.; Peterson, D. H.; Dorfman, R. I., and Kenyon, A. T.: The Daily Urinary Excretion of Estrogenic and Androgenic Substances by Normal Men and Women, *J. Clin. Investigation* 16: 695-704 (Sept.) 1937. Koch, F. C.; Kenyon, A. T.; Gallagher, T. F.; Peterson, D. H., and Dorfman, R. I.: The Urinary Excretion of Androgenic and Estrogenic Substances in Certain Endocrine States: Studies in Hypogonadism, Gynecomastia, and Virilism, *ibid.* 16: 705-718 (Sept.) 1937.

9. Saphir, William, and Parker, M. L.: Adrenal Virilism, *J. A. M. A.* 107: 1286 (Oct. 17) 1936.

3. Otherwise normal women with symptoms of virilism may represent mild forms of intersexuality due to the presence of aberrant or misplaced embryonic testicular tissue with a resulting quantitative imbalance of gonadal hormone production.

25 East Washington Street—104 South Michigan Avenue.

Clinical Notes, Suggestions and New Instruments

RUPTURE OF THE GALLBLADDER WITHOUT ASSOCIATED CHOLECYSTITIS

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Spontaneous rupture of the gallbladder complicating cholecystitis and cholelithiasis is relatively rare. A review of the literature fails to reveal a reported case of rupture without evidence of inflammation or stones. The diagnosis of this abdominal catastrophe is difficult because of the diversity of clinical symptoms, the lack of localization in the physical manifestations and the rarity of such a pathologic process.

The following report outlines the clinical and pathologic features of such a case:

REPORT OF CASE

A white man aged 58, an executive, seen March 23, 1937, complained at this time of failing vision, of four weeks' duration, and of nocturia (from two to three times). His past history



Fig. 1.—Gross specimen showing undersurface of liver, with ruptured gallbladder and large hematoma.

was of interest in that he had had a duodenal ulcer for a number of years, was operated on for adhesions in 1927, and had a gastroenterostomy in 1929 for a pyloric obstruction. He had been entirely relieved of his gastrointestinal symptoms following this operation. Aside from typhoid and diphtheria in his youth, the past history was not notable. His father and mother had both died at the age of 82 and there was no other history of cardiorenal disease in his family.

Physical examination showed a marked general and retinal arteriosclerosis with recent retinal hemorrhages. The heart was moderately enlarged to the right and left and the blood pressure was 212 systolic, 128 diastolic. An electrocardiogram showed a PR interval of 0.14 second with definite Q waves in

the chest lead and the T waves markedly inverted in lead 1, upright in leads 2 and 3 and inverted in the chest lead.

Laboratory examination at this time revealed white blood cells 6,000, red blood cells 4,000,000, hemoglobin 85 per cent, a blood smear slight anisocytosis and 12 per cent stab cells, non-protein nitrogen 40 mg., blood sugar 111 mg. per hundred

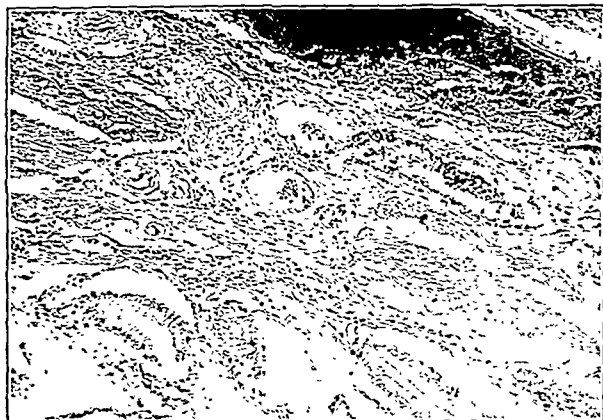


Fig. 2.—Section from wall of gallbladder at margin of necrotic area showing extensive hemorrhage and great thickening of medial coats of several arterioles with almost complete obliteration of the lumen. Reduced from a photomicrograph with a magnification of 200 diameters.

cubic centimeters, Kline reaction negative, intravenous phenol-sulfonphthalein 10 per cent in thirty minutes, the specific gravity by the Addis concentration test 1.014 at 7 a. m., 1.018 at 8 and 1.018 at 9, and a heavy precipitate of albumin in the urine, with no sugar, an occasional red blood cell and white blood cell and fine granular casts.

A diagnosis of hypertensive cardiovascular-renal disease was made, and the patient was put on a modified rest regimen with sedatives. His blood pressure during the next two months varied from 176/90 to 240/140.

September 17 the patient was hospitalized because of an increased blurring of vision, headaches, nocturnal dyspnea and attacks of syncope. At this time he showed a marked pitting edema of the lower extremities, moderate cyanosis and moist crepitant rales in both bases. The blood pressure on admission was 232/124. Laboratory tests at this time were not notable except for the nonprotein nitrogen, which was 54 mg. He remained in the hospital for eight days at this time, and on rest and digitalis the edema partially subsided but the other symptoms were unchanged.

He returned to his home and continued to be mildly decompensated, somewhat mentally confused and orthopneic. October 11 at 11 a. m., while having an elimination, he was seized with excruciating pain in the right upper quadrant associated with a small coffee ground vomitus. He was returned to the hospital in shock. On admission his blood pressure was 268/100, temperature 97.2 F., and respiratory rate 24. A very tender abdominal mass was palpable 6 cm. below the right costal margin but there was no abdominal rigidity. The blood count on admission showed white blood cells 6,200, of which 8 per cent were stab cells, 74 per cent segmented cells, 17 per cent lymphocytes and 1 per cent monocytes; red blood cells 3,560,000, with 67 per cent hemoglobin. Repeated white and red blood counts at intervals of two hours revealed no appreciable change from the original count. A tentative diagnosis of mesenteric thrombosis was made and the patient was given morphine and supportive treatment. The pain in the right upper quadrant remained so severe that it was difficult to keep him in bed. The mental confusion increased and partial restraint was necessary. His blood pressure varied from 268/100 to 175/85 and there was a progressive cardiac failure. He died forty-eight hours after admission to the hospital.

SUMMARY OF THE POSTMORTEM EXAMINATION (BY DR. L. S. N. WALSH)

Gross.—There was a large hematoma, which lay on the dorsal aspect of the liver. It originated in an opening in the

gallbladder wall which was about 1.5 cm. in diameter. The liver otherwise appeared normal.

The gallbladder was large, distended, purplish red and soft. The cystic duct contained blood.

Microscopic.—The liver appeared normal except that the periportal spaces were infiltrated by lymphocytes.

The pancreas appeared normal but the vessels in and around it presented advanced sclerotic changes, often with great thickening and hyalinization of the walls, which occluded them almost completely. This process was seen in small arterioles and seemed to involve both the media and the intima. A large vein appeared at several levels in which there was an organized and recanalized thrombus.

Sections from the gallbladder wall at some levels showed active vascular engorgement and hemorrhage into the tissue. Both well preserved and disintegrating erythrocytes with free pigment were seen. The filamentous processes of the mucosa at such levels were present and appeared normal except that they were forced widely apart. In the gallbladder wall small arterioles were encountered with greatly thickened and hyalinized walls, also arterioles with proliferation of the intimal coat practically occluding the vessel. The gallbladder wall near the site of rupture was loaded with extravasated blood and polymorphonuclear leukocytes. The mucous membrane had disappeared and many of the cells in the wall itself were necrotic.

The anatomic diagnoses were:

1. Hyperplastic arteriolar sclerosis involving the vessels of the pancreas, spleen, liver and kidneys with infarction, rupture and fatal hemorrhage from the gallbladder wall.
2. Arteriosclerosis, general.
3. Organized thrombophlebitis of the pancreatic vein.
4. Hypertrophy of the left ventricle.
5. Chronic diffuse nephritis (small, red, granular, arterio-sclerotic kidneys).
6. Hydropericardium.
7. Hemorrhagic erosions of the stomach.
8. Emaciation.
9. Appendectomy.
10. Gastroenterostomy.



Fig. 3.—Section of wall of gallbladder showing distention by hemorrhage with flattening and stretching of otherwise intact mucosa. Reduced from a photomicrograph with a magnification of 200 diameters.

11. Chronic visceral peritonitis, right upper quadrant.
12. Chronic periportal hepatitis.
13. Adenoma of the kidneys.
14. Chronic fibrous pleurisy.

COMMENT

A case of spontaneous rupture of the gallbladder occurred without associated cholecystitis. Although a pathologic rarity, this condition should be considered when making the differential diagnosis of an intra-abdominal catastrophe.

3720 Washington Avenue.

FRACTURES OF FEMUR—ENGEL AND MAY

TWO-PLANE DIRECTION AND RANGE FINDER FOR
NAILING FRACTURES OF THE NECK
OF THE FEMUR

GILSON COLBY ENGEL, M.D., AND HANS MAY, M.D.
PHILADELPHIA

JOUR. A. M. A.
MAY 28, 1938

DESCRIPTION OF INSTRUMENT

This instrument is composed of one plate instead of the two plates as originally described. This plate is a pie-shaped sector made of aluminum, which is faintly opaque to x-rays

Because of the extreme difficulty in getting the Kirschner wire in proper position to feed the Smith-Petersen nail on it, in nailing fractures of the neck of the femur and in determining the length of the femoral neck, our interest was stimulated to find a better method than that used today. It has been, and still is, easy to get the position of the fragments and the wire in good alinement in the one plane, anterior posterior, but the difficulty has been in getting these alinements in the

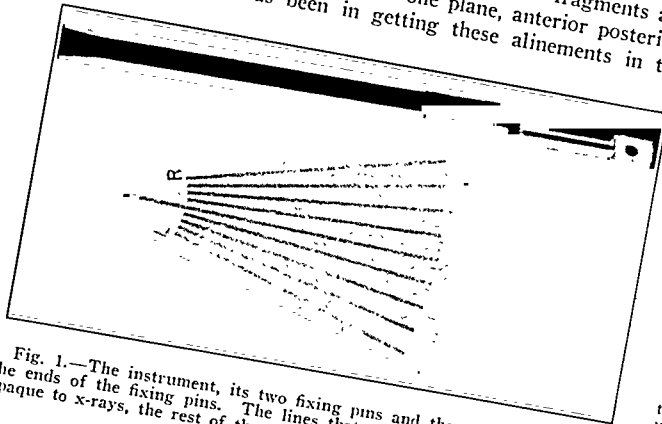


Fig. 1.—The instrument, its two fixing pins and the cap that screws on the ends of the fixing pins. The lines that converge toward the apex are opaque to x-rays, the rest of the plate only faintly so.

second plane, lateral, as well as the first. With the direction finder we feel that these difficulties are entirely eliminated, and besides being able to get perfect position regarding fragments, wire and nail, and the proper length of nail, it can be done through a small incision, which also is of advantage in elderly patients by making it possible for the patients to start motion at once and to get them out of bed early. Since our presentation of the first model,¹ further experimentation has brought the developmental stage of this instrument

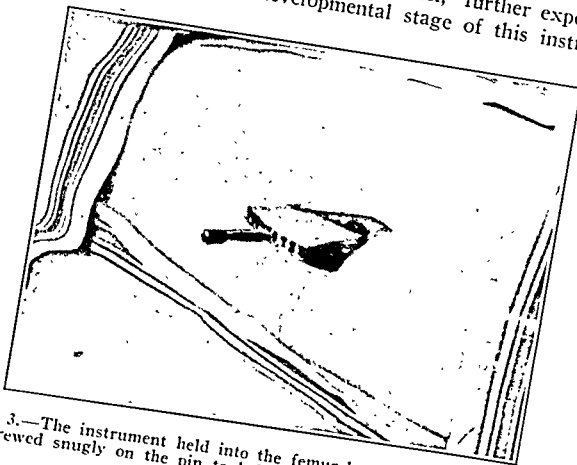


Fig. 3.—The instrument held into the femur by its fixing pin, with the cap screwed snugly on the pin to hold the plate in place.

to the greatest point of simplicity and accuracy. The instrument we are presenting is the final outcome of experimentation and in this form has been given to the manufacturer for production. It can be used as a direction and range finder if the Smith-Petersen nail, the Henderson lag screw or the Moore nails are used for internal fixation of intracapsular fractures of the neck of the femur.

From the Lankenau Hospital, Philadelphia, service of Dr. George P. Müller.
Owing to lack of space, this article has been abbreviated in THE JOURNAL by the omission of some of the illustrations. The complete article appears in the authors' reprints.
1. Engel, G. C., and May, Hans: Surg., Gynec. & Obst. 66:495 (Feb.) 1938.

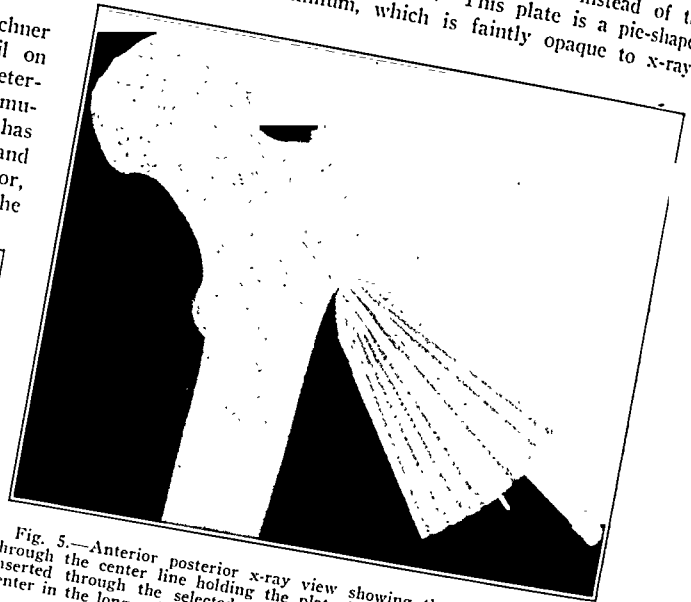


Fig. 5.—Anterior posterior x-ray view showing the original fixing pin through the center line holding the plate in position, and the second pin inserted through the selected converging line, which passes through the center in the long axis of the neck of the femur.

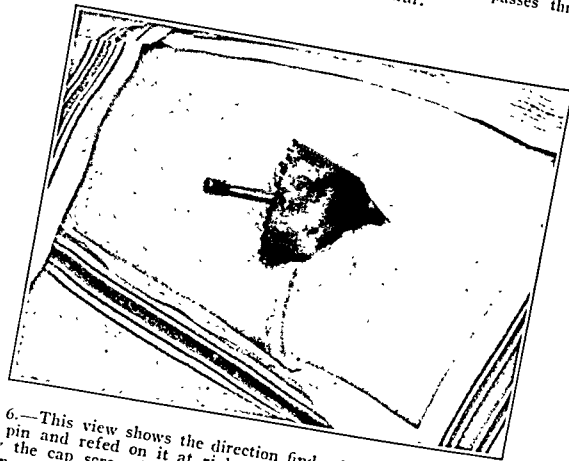


Fig. 6.—This view shows the direction finder having been slipped off the square pin and refed on it at right angles to the original position. It is held by the cap screwed on the pin. The original fixing pin, of course, has been removed.

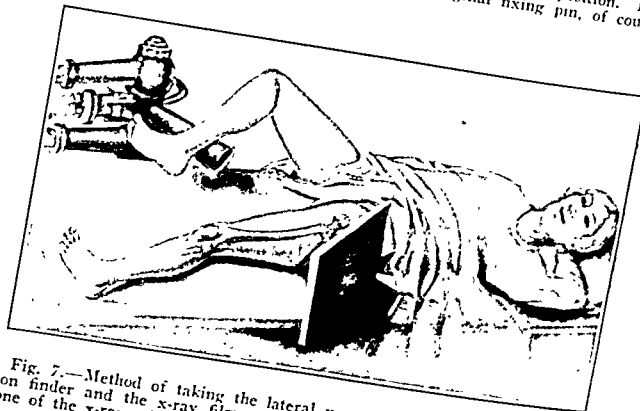


Fig. 7.—Method of taking the lateral x-ray plate. Note that the direction finder and the x-ray film are held parallel to each other, while the cone of the x-ray tube is perpendicular to these two plates.

(fig. 1). On this sector are converging lines of a metal which is densely opaque to x-rays, converging at the apex of the sector. Underlying each of these lines are two square canals, one canal being just under the other (fig. 2). In these canals

will fit square steel pins constructed with a tapering sharp point at one end and a screw thread tapped on the other. There is a cap which screws on the end of the pins. The purpose of this cap is, first, to take the blow of the hammer when the pin is driven into the cortex; secondly, to hold the plate snugly against the femur, and, thirdly, to withdraw the pin from the cortex of the femur by screwing up on the cap. All these canals take a $\frac{3}{32}$ -gauge Kirschner wire.

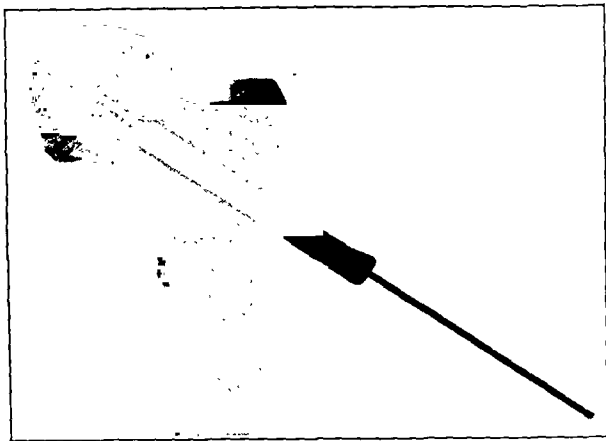


Fig. 11.—Anterior posterior view of the Smith-Petersen nail partially driven in on the Kirschner wire as a guide.

USE OF INSTRUMENT

The patient is anesthetized with spinal anesthesia and the fracture reduced by the Leadbetter maneuver. The leg is held by an assistant in abduction and about 10 degrees internal rotation. The skin over the affected thigh is prepared and an incision made from the great trochanter about 2 inches (5 cm.) in length, paralleling the shaft of the femur. This incision is carried down through the periosteum to the bone. The two-plane direction finder is then inserted into the incision so that the apex bisects the angle formed by the great trochanter and the shaft of the femur. The square pin is inserted into the center hole of the lower row of canals, the cap being partially screwed on, and is driven into the cortex of the bone. The plane of the direction finder is parallel to the long axis of the femur (fig. 3).

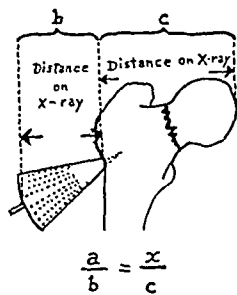


Fig. 13.—The method used to deduce the actual length of the femoral neck.

An anterior posterior roentgenogram is then taken and the converging line in the x-ray plate which is in the direction of the long axis of the neck of the femur is selected (fig. 4). Through the corresponding tube is inserted a second square pin in the opposite row of holes to which the first pin was inserted (fig. 5). The first pin is then removed by setting up on the thumb-screw cap, leaving only the second pin and the direction finder in position. The direction finder is then slid off of the second inserted pin, turned at right angles and inserted over the pin again, the pin passing through the center line of the upper row of canals. The screwcap is screwed snugly on this pin just to keep the plate in position (fig. 6).

A lateral x-ray view is then taken by pointing the cone of the x-ray tube under the unaffected leg, the thigh of this leg being flexed on the trunk, so that the cone of the x-ray tube is perpendicular to the plane of the direction finder and perpendicular to the x-ray plate, which is held parallel to the plane of the direction finder and just above it (fig. 7). From this lateral view we again select the converging line, which is in

the long axis of the neck of the femur in this view. Through its corresponding tube in the opposite row of holes to that in which the pin is fitted is inserted a Kirschner wire. This wire has previously been marked with a wire cutter (see deduction of measurements) so that when the mark on the wire reaches the outer edge of the direction finder we know that the point of the wire is just to the head (fig. 8). After the wire is in, the direction finder and its pin are both withdrawn (fig. 9). The Smith-Petersen nail is fitted over the wire and driven in with a nail impactor (figs. 10, 11 and 12). When it is home, the Kirschner wire is withdrawn and the fragments are impacted with the bone impactor. A few skin sutures are put in place and a small dressing is applied.

DEDUCTION OF MEASUREMENTS

Knowing the actual length of the direction finder, which is 9 cm., we find the actual length of the neck of the femur by a simple ratio. The actual length of the direction finder is to the length of the direction finder as measured on the anterior posterior x-ray plate as x (the actual length of the neck of the femur) is to the measured length of the neck of the femur in the x-ray plate. Thus we get the actual length of the neck of the femur to the actual length of the direction finder, we get the length, which we mark on the Kirschner wire. The actual length of the neck of the femur minus one-half inch, allowing for impaction of fragments, gives us the length of the nail to be used.

The operation is simple, accurate and nonshocking, making it possible to start motion at once; the patient is up in a wheelchair within forty-eight hours and on crutches within ten days to two weeks, depending on his physical strength.

1914 Pine Street—Spruce Medical Building.

RASMUSSEN ANEURYSM: ITS ROENTGEN APPEARANCE

REPORT OF CASE WITH NECROPSY

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The existence of aneurysms of branches of the pulmonary artery in tuberculous cavities has been known for many years. In fact, they have long been recognized among the more common causes of massive and fatal hemoptysis in phthisis.

About 100 years ago, Fearn¹ gave what appears to be the first description of such an aneurysm. He reported the case of a man aged 41, "of spare and strumous habit," who suffered from a chronic cough, followed by fatal pulmonary hemorrhage. Postmortem examination revealed numerous cavities in both lungs and "in the upper left lobe there was an evacuated cavity, two inches in diameter and into it was seen jutting distinctly an aneurysmal sac as large as a nutmeg, which had burst by a cleftlike opening. The parietes of the sac were thin, and it did not contain any fibrinous layers. A vessel the size of a small crow-quill, leading from a considerable trunk of the pulmonary artery, was distinctly traceable into the sac."

A similar case was reported by Cotton² in 1861. His patient died after repeated hemoptyses, and an autopsy disclosed a cavity which contained an aneurysm as large as a walnut arising from "an artery about the size of a crow-quill running along its wall."

In 1868 Rasmussen³ reported a series of such aneurysms with a discussion of their pathologic appearance. These aneurysms have since been known by his name.

From the Tuberculosis Service of the Riverside Hospital, Dr. Max Taschman, director.

1. Fearn, S. W.: Aneurysm of the Pulmonary Artery: Report of Case, *Lancet* 35: 679, 1840.

2. Cotton, R. P.: Phthisis: Fatal Hemorrhage from an Aneurysm of a Small Branch of the Pulmonary Artery, *M. Times & Gaz.* 2: 240, 1861.

3. Rasmussen, F. W.: Hemoptysis Especially when Fatal in Its Anatomical and Clinical Aspects, *Edinburgh M. J.* 4: 385, 1868.

PATHOGENESIS OF RASMUSSEN ANEURYSM

The formation of these aneurysms has been variously explained. Rasmussen accepted Rokitsky's theory that they resulted from the absence of support on one side of the vessel following the destruction of the adjacent lung tissue. Furthermore, he maintained that the tendency for the vessel to expand toward the unsupported side was materially hastened by the increased intra-arterial pressure as a consequence of the

destruction of the neighboring blood vessels by the tuberculous process.

Aneurysms in young and rapidly growing cavities are, according to Jaffe,⁴ the result of disparity in the rate of occlusion of the vessel on the one hand and the rate of the progressing caseation on the other. He maintains that the vessel wall is weakened by the advancing caseous process at a time when it still has to carry the full load of blood pressure. Adventitia,

media and finally internal elastic membrane are destroyed by caseation necrosis, while the intima is slightly thickened. The necrotic portion of the wall is autolyzed by the pus in the cavity, and the thin remaining membrane is stretched and transformed into an aneurysmal sac.

FATE OF RASMUSSEN ANEURYSM

Unless death from rapidly progressive tuberculosis or its complications supervenes early, such aneurysms usually rupture at their apical aspect as a result of pressure against their weakened walls. Less commonly the rent occurs at their narrow stalk probably because of continuous pulsation and the weight of their contents. Rarely they "heal" by filling the entire cavity in which they are located. In such cases rupture is prevented by the support afforded by the walls of the cavity. In one of our cases the aneurysm turned into a solid mass of laminated clot and appeared to be in no way connected with the fatal issue.

While numerous reports and discussions of the Rasmussen aneurysms have appeared in the literature, little of value has been offered regarding their antemortem detection. It is our purpose in this communication to present a case, with post-mortem examination, in which the cavity and its enclosed aneurysm are clearly visible on the roentgenogram of the chest.

REPORT OF CASE

J. R., an American Negro laborer, aged 35, was admitted to the Riverside Hospital May 21, 1937. His family history and his previous history were irrelevant, except that he had an attack of pneumonia in the spring of 1935 and pleurisy in May 1936, from which he had apparently made a complete recovery. He began to cough and expectorate in January 1937 and soon experienced night sweats. He had a hemoptysis of about 100 cc. in April and it was because of progressive weakness that he sought admission to the hospital the next month.

On physical examination the patient was well nourished and well developed and showed no evidence of respiratory distress. There were dullness, bronchovesicular breathing over the upper half of the left lung and medium sized moist rales over the entire left side of the chest. His heart appeared to be normal. The blood pressure was 130 systolic and 82 diastolic. The urine was normal and the Kahn reaction of the blood was negative. The sputum was positive for tubercle bacilli (Gaffky VI).

Chest films (fig. 1) showed an advanced bilateral infiltration. In the lower portion of the left lung was a cavity about 4 cm.

in diameter, at the lower aspect of which was seen a dense irregular shadow, which, because of the recent hemoptysis, was thought to be due to a blood clot. The patient was kept at absolute rest. His general condition remained unchanged for two months. The temperature ranged between 99 and 100.6 F. The cough continued and the sputum amounted to about 100 cc. a day. He had a massive hemoptysis July 22, and the temperature rose to 104 F. Auscultation several days later showed moist rales throughout both lungs. Thereafter the patient's course was progressively downhill. His temperature fluctuated between 100 F. and 104 F. His cough became more and more violent and the sputum heavily streaked with blood. Several times the patient had small frank hemoptyses. He grew weaker and increasingly more dyspneic and died September 19, four months after his admission to the hospital.

AUTOPSY

Autopsy showed an extensive pulmonary tuberculosis, with cavitation at both apices. The air passages were free of blood. In the upper portion of the left lobe (fig. 2) about 4 cm. below the interlobar fissure and about 3 cm. in from the lateral margin of the lung there was a fairly fresh thin-walled cavity, with shaggy walls, containing a small amount of blood-stained debris. This cavity was two thirds filled by an intact, soft and apparently empty spherical gray mass which arose by a narrow stalk from the inner lower angle of the cavity. This stalk was ruptured on one side and could be easily traced through a small branch to a large trunk of the pulmonary artery. When the aneurysm was opened by an incision below its apex, it was seen to be empty above and to contain a loose blood clot below. The patient's repeated hemorrhages had apparently arisen from the small rent in the stalk, which had alternately closed and opened with the retraction of the blood clot.

COMMENT

Shadows of increased density within cavities have almost invariably been considered as due to unexpelled blood clots

following hemoptyses. No doubt this is true in the vast majority of cases, but in view of our observation it is well to bear in mind that such shadows may be due to aneurysmal dilatations of branches of the pulmonary artery. It seems reasonable to believe that a differential diagnosis between an aneurysmal dilatation and a blood clot within a cavity may be made roentgenographically. Dense shadows within cavities, if due to blood clots, will change in size, shape, contour and position and will disappear under observation. Shadows due to aneurysmal dilatations are more persistent and will not change rapidly in contour, size, shape and position, nor will they disappear on serial roentgenography.

The practical importance of recognizing these aneurysms is quite obvious. Experience has taught that it is best to collapse a bleeding tuberculous lung after the hemoptysis and blood spitting have ceased. In this way blood is not entrapped in the parenchyma and small bronchi, and a stormy course is avoided after the induction of pneumothorax. If this conservative procedure is followed in cases in which hemoptysis occurs because of a bleeding Rasmussen aneurysm, extensive bronchogenic spread or even exsanguination may occur. In



Fig. 1.—Advanced bilateral tuberculosis. The cavity in the left lower part of the chest contains a dense irregular mass.



Fig. 2.—Aneurysm within cavity in the left lower lobe.

4. Jaffe, R. H.: Pathology of Pulmonary Tuberculosis, in Goldberg's Clinical Tuberculosis, Philadelphia, F. A. Davis Company, 1935, p. 139.

such cases it would seem that the best interests of the patients would be served by early collapse in spite of the active hemoptysis and questionable condition of the opposite lung.

If the possibility of their existence and their roentgen appearance are kept in mind, Rasmussen aneurysms should be recognized more often before death than heretofore. The condition must be treated in the light of the fact that unless compressed effectively into the cavity in which the aneurysm rests, large and often fatal hemoptysis is the almost inevitable result.

25 Central Park West.

Special Article

VITAMIN E

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IOWA CITY

This article and others recently published or to be published comprise a new series on the present status of our knowledge of the vitamins. They have been prepared under the general auspices of the Council on Pharmacy and Chemistry and the Council on Foods. The opinions expressed are those of the authors and not necessarily the opinions of either council. Reprints are not available but the articles will be published later in book form.—Ed.

Some fifteen years ago several investigators in animal nutrition began to suspect that for normal reproduction the rat required a dietary constituent not yet recognized or included within the generally accepted group of accessories. At first there was some hesitation in accepting yet another member into the already large family of vitamins, but convincing evidence from various laboratories, especially from that of Evans and his co-workers, soon established the fact that when reared on diets otherwise complete, but not containing this new fat-soluble factor, rats did not have offspring, although they appeared to be quite normal in other respects. Male animals became infertile through degeneration of the germinal epithelium and the damage was irreparable. Females failed to carry their young to term; the embryos died and were absorbed, but the female reproductive mechanism as such was not damaged, since adequate dosages of the missing factor restored fertility. Still other experiments showed that diets in which this factor, although originally present, had been destroyed by oxidation were likewise inadequate for reproduction.

Thus vitamin E came into its own. In the five years that has elapsed since the publication of the previous symposium on vitamins in THE JOURNAL, our knowledge of vitamin E has been advanced considerably. It has been shown that at least three substances possess the effect of vitamin E, and their chemical nature is beginning to be understood. The need for vitamin E in other species, especially in domestic animals, its rôle in reproduction and possibly in other physiologic processes, its possible therapeutic value in preventing habitual abortion—these and other aspects have received active attention. Only the more significant papers can be discussed here; a summary of the earlier work and a bibliography prior to 1932 will be found in the previous review.¹

CHEMISTRY

A suitable starting point for a chronological presentation of the chemical status of vitamin E is its association

with antioxidants in nature. The antioxidants here concerned are substances which delay or prevent the auto-oxidation of fats and the rancidity resulting therefrom. The probable presence of these oxidation-inhibiting agents in certain vegetable oils, notably in wheat germ oil, which is rich in vitamin E, was deduced from the protection which this oil afforded against rancidity in certain experimental rations which were particularly susceptible to this form of oxidation. An actual association of antioxidant and vitamin E was first demonstrated in lettuce oil² and later in tomato and in wheat germ oil;³ subsequently other vegetable sources were also found to contain both.

The ready susceptibility of vitamin E to oxidative destruction under favorable conditions is the basis of the common practice to include cod liver oil, butter fat or lard, sometimes in incipient rancidity, in experimental rations designed to be deficient in E; there are many illustrations⁴ of the disappearance of vitamin E in the presence of these fats. Treatment of the food with ferric chloride⁵ has been employed for the same purpose, the explanation being that oxidation destroyed vitamin E or the protecting antioxidants, or both.

In order to examine the relations between vitamin E and antioxidants more carefully, Olcott and Mattill⁶ prepared a concentrate of vitamin E from wheat germ oil, which was found to have antioxygenic action as well as the biologic activity of vitamin E. This concentrate proved to be similar to the one first made by Evans and Burr some years ago and described in their monumental memoir on vitamin E. It differed in one respect from theirs: acetylation did not destroy the biologic activity although antioxygenic action was abolished. Hydrogenation was again found not to destroy the biologic activity (nor did it abolish the antioxygenic action) but the hydrogenation was incomplete even under very drastic treatment, as had been found by others.⁷ The destructive action of chlorine and bromine was reversible; boiling with zinc and hydrochloric acid in methanol restored biologic activity. Mild oxidation with silver nitrate seemed to reduce but not destroy vitamin E activity, but treatment with more vigorous oxidants such as potassium permanganate, ozone and perbenzoic acid did so.⁸

Of greatest chemical interest was the biologic activity of acetylated or benzoylated concentrates; the formation of such derivatives from vitamin E would signify the presence of one or more hydroxyl groups. The antioxygenic action, which in these substances probably depends on a hydroxyl group,⁹ was destroyed by such

2. Olcott, H. S., and Mattill, H. A.: The Unsaponifiable Lipids of Lettuce: III. Antioxidant, *J. Biol. Chem.* **93**: 65 (Sept.) 1931.

3. Bradway, Elizabeth M., and Mattill, H. A.: The Association of Fat-Soluble Vitamins and Antioxidants in Some Plant Tissues, *J. Am. Chem. Soc.* **56**: 2405 (Nov.) 1934.

4. Macomber, Donald: Studies of Reproduction of the Rat: III. Vitamin E Neutralized When Mixed with Lard, *New England J. Med.* **209**: 1235 (Dec. 14) 1933. Ringsted, Axel: Histological Investigations on the Causes of Sterility in Albino Rats Kept on a Normal Butter Diet, *Acta path. et microbiol. Scandinav.* **11**: 197 (No. 2) 1934; through *Biol. Abstr.* **9**: 11407 (No. 6) 1935. Lassen, H. K.: The Influence of Butter Fat and Peanut Oil on the Growth and Fertility of Rats, *Acta path. et microbiol. Scandinav.* **11**: 183 (No. 2) 1934.

5. This was first suggested by Waddell and Steenbock and has been employed in some of the experiments to be reviewed here. According to M. W. Taylor and V. E. Nelson (Some Observations on Ferric Chloride Addition to the Diet, *Proc. Soc. Exper. Biol. & Med.* **27**: 764 [May] 1930), both the nature of the diet and the manner of applying the ferric chloride determine the result. The procedure destroys vitamin E, but the partial destruction of vitamin A, or of other unknown essentials, and the possible toxicity of the salt itself are all variables that often make the interpretation of results difficult.

6. Olcott, H. S., and Mattill, H. A.: Vitamin E: I. Some Chemical and Physiological Properties, *J. Biol. Chem.* **104**: 423 (Feb.) 1934.

7. Bowden, F. P., and Moore, Thomas: Absorption Spectrum of the Vitamin E Fraction of Wheat-Germ Oil, *Nature* **132**: 204 (Aug. 5) 1933.

8. Olcott, H. S.: Vitamin E: II. Stability of Concentrates Toward Oxidizing and Reducing Agents, *J. Biol. Chem.* **107**: 471 (Nov.) 1934.

9. Olcott, H. S., and Mattill, H. A.: Antioxidants and the Oxidation of Fats: I. Inhibitors, *J. Am. Chem. Soc.* **58**: 1627 (Sept.) 1936.

1. Evans, H. M.: Vitamin E, *J. A. M. A.* **99**: 469 (Aug. 6) 1932.

esterification; biologic activity was not; hence, if vitamin E possessed a hydroxyl group, either it was resistant to esterification or the ester was physiologically utilizable. By an interesting series of reactions Olcott¹⁰ demonstrated that vitamin E does contain a hydroxyl group which is easily esterified and whose esters with acetic or benzoic acid are utilizable (hydrolyzable) by the animal body while a compound formed with phenyl isocyanate, for example, is not.

The presence of a hydroxyl group that could be acetylated was also demonstrated by Drummond and his co-workers¹¹ in comprehensive studies of the unsaponifiable fraction of wheat germ oil and of a very potent concentrate obtained from it. Only one of two oxygen atoms present could be acetylated, the other being inert, and the acetylated product was still active biologically. Reactions with iodine or hydrogen suggested the presence of three double bonds, but the concentrate resisted complete hydrogenation. Spectroscopic evidence, which is to be discussed, indicated that the hydroxyl group might be derived from a keto-enol structure but this view had to be abandoned later.¹² Data on surface pressures and surface potentials secured by Askew¹³ suggested a reduced polycyclic structure of the sterol type.

A study of the curves or bands in the absorption spectrum of the ultraviolet region is an increasingly useful tool for elucidating organic structure. This method was first applied to crude concentrates of vitamin E by Morton and Bowden and their co-workers.¹⁴ In the biologically active portion of much purer concentrates prepared from cottonseed as well as from wheat germ and palm oils Olcott¹⁵ found a band with a maximum at 2,940 angstrom units; this was later confirmed.¹⁶ His opinion that this band was not the property of the vitamin molecule but of some closely related impurity removable with difficulty, perhaps antioxidant,⁹ was based on the lack of parallelism between the intensity of this band and the vitamin E content as determined biologically. Some effective concentrates showed no band; others, notably from palm oil, produced an intense band but had low biologic activity. Furthermore, various reagents caused the band to migrate without seeming to affect the vitamin. Despite further careful work on this question, Drummond and his co-workers¹⁷ were compelled to leave it open.

Crystalline structure is usually considered a criterion of purity. All investigations thus far mentioned suffered from lack of purity of the starting material. This was a mixture; all the commonly used methods for isolating a substance in pure form had been unavailing. These included the use of varied solvents, high vacuum distillation which was often destructive, chromatographic absorption which Drummond found somewhat useful, and the preparation of crystallizable derivatives. Suc-

cessful application of the last method on a microchemical scale with cyanic acid to combine with the hydroxyl group finally enabled Evans and the Emersons¹⁸ to isolate three different crystalline allophanates from a vitamin E concentrate of wheat germ oil.¹⁹ When the alcohols were regenerated from them, one proved to be inactive biologically, another, later called β -tocopherol, had some activity, and the third, which they called α -tocopherol, was effective in doses of from 1 to 3 mg. It was a light yellow viscous oil which resisted all attempts at crystallization, but its conversion to another crystalline derivative (with *p*-nitrophenyl isocyanate), followed by reconversion to the allophanate and regeneration of the alcohol, left its biologic activity unimpaired. The peak of its absorption band was at 2,980 angstrom units, and micro-analysis indicated a provisional formula, $C_{29}H_{50}O_2$. Olcott, and especially Drummond, had been able to prepare concentrates having equal or even greater biologic activity than α -tocopherol. Is a mixture more effective than any of its separate constituents and what is pure vitamin E? Evans and his co-workers expressed the opinion that probably several closely related substances possess the biologic activity of vitamin E in varying degree. Soon thereafter they isolated the same α -tocopherol from cottonseed oil²⁰ and later²¹ still another active substance, γ -tocopherol, from the same source. Further intensive investigations revealed that only α -tocopherol is present in lettuce and that palm oil is qualitatively similar to cottonseed oil and like it contains no β -tocopherol. These substances have unequal biologic activity, the α being more effective than β - or γ -components. They also proved to be antioxygenic²² and hence possibly phenolic in nature, but the antioxygenic action did not parallel biologic activity, the γ being the most effective inhibitor. The confusion that has existed between the observations of different investigators is thus largely resolved, and the ultimate consequences of this resolution will be important. One may now speak of the multiple nature of vitamin E in much the same sense as we accept the fact that there are several substances which have vitamin D activity.

When the microtechnic of Emerson is applied on a larger (even if costly) scale,^{22a} sufficient material will become available for more comprehensive study of the vitamin E molecule(s). Indeed, some progress in this direction has already been made. By thermal decomposition of α -tocopherol Fernholz²³ produced a crystalline

10. Olcott, H. S.: Vitamin E: III. Evidence for the Presence of a Hydroxyl Group; The Biological Utilization of Esters; Absorption Spectrum, *J. Biol. Chem.* **110**: 695 (Aug.) 1935.

11. Drummond, J. C.; Singer, Eleanor, and MacWalter, R. J.: A Study of the Unsaponifiable Fraction of Wheat Germ Oil with Special Reference to Vitamin E, *Biochem. J.* **29**: 456, 1935.

12. Drummond, J. C.; Singer, Eleanor, and MacWalter, R. J.: Further Observations on the Constituents of the Unsaponifiable Fraction of Wheat Germ Oil with Particular Reference to Vitamin E, *Biochem. J.* **29**: 2510, 1935.

13. Askew, Frederic: Surface Films of Vitamin E Concentrates, *Biochem. J.* **29**: 472, 1935.

14. Bowden, Philip, and Moore, Thomas: Absorption Spectrum of the Vitamin E Fraction of Wheat-Germ Oil, *Nature* **131**: 512 (April 8) 1933. Morton, R. A., and Edisbury, J. R.: Absorption Spectrum of Unsaponifiable Matter from Wheat-Germ Oil, *ibid.* **131**: 618 (April 29) 1933. Bowden and Moore.¹

15. Olcott, footnotes 8 and 10.

16. Martin, A. J. P.; Moore, Thomas; Schmidt, Marion, and Bowden, F. P.: Absorption Spectrum of Vitamin E, *Nature* **134**: 214 (Aug. 11) 1934.

17. Drummond, Singer and MacWalter, footnotes 11 and 12.

18. Evans, H. M.; Emerson, O. H., and Emerson, Gladys A.: The Isolation from Wheat Germ Oil of an Alcohol, α -Tocopherol, Having the Properties of Vitamin E, *J. Biol. Chem.* **113**: 319 (Feb.) 1936.

19. This is the first record of the successful production of crystalline derivatives except for the preliminary note by Emerson and Gladys A. Emerson, *Crystalline Derivatives of Vitamin E*, *Inst. Phys. Chem. Research [Tokyo]* **26**: 1, 1936.

20. Emerson, O. H.; Emerson, Gladys A.; and Evans, H. M.: Isolation from Cottonseed Oil of Alcohol Resembling Alpha Tocopherol from Wheat Germ Oil, *Science* **82**: 421 (May 1) 1936.

21. Emerson, O. H.; Emerson, Gladys A.; Mohammad, A., and Evans, H. M.: The Chemistry of Vitamin E, *J. Biol. Chem.* **122**: 99 (Dec.) 1937.

22. Olcott, H. S., and Emerson, O. H.: Antioxidants and the Antioxidation of Fats: IX. The Antioxidant Properties of the Tocopherols, *J. Am. Chem. Soc.* **59**: 1008 (June) 1937.

22a. According to Drummond (Drummond, J. C., and Hoover, A. A.: Studies on Vitamin E [Tocopherol], *Biochem. J.* **31**: 1852 (Oct.) 1937) the allophanate method is not very practicable because of high losses. Neither he nor Todd and his associates (Todd, A. R.; Bergel, F., and Work, T. S.: Studies on Vitamin E: II. The Isolation of β -Tocopherol from Wheat Germ Oil, *Biochem. J.* **31**: 2257 [Dec.] 1937) secured any α -tocopheryl allophanate, but only the β .

23. Fernholz, E.: The Thermal Decomposition of α -Tocopherol, *J. Am. Chem. Soc.* **59**: 1154 (June) 1937.

sublimate which he identified as durohydroquinone (tetramethyl hydroquinone), and he suggested that α -tocopherol might be a mono-ether of durohydroquinone. The alkyl portion of the molecule is still under investigation. McArthur and Watson²⁴ have identified crystalline duroquinone in the selenium dehydrogenation products of α -tocopherol. They believe its origin to be in a sidechain consisting perhaps of two isoprene units. A fluorescent oily product, arising from the nucleus of α -tocopherol, is being investigated. Recently two new tocopherols from wheat germ oil have been described,^{24a} neotocopherol and cumotocopherol, the latter appearing to be a mono ether of pseudocumohydroquinone.

PHYSIOLOGY AND PATHOLOGY

The progress of the chemical studies which have been outlined required continuous animal assays of the biologic activity of the products obtained. The most suitable method of assay uses adult female rats, properly prepared by subsistence on a diet deficient in vitamin E. Ability to bear living young following the administration by mouth of varying amounts of concentrates is a measure of vitamin E potency; when the dose is inadequate the embryos die and are resorbed.²⁵ There is considerable and thus far uncontrollable variability in the response of individual animals to the same dosage, and few statistical studies have been reported.²⁶ The reason for this is obvious: until recently the concentrates were all mixtures, and investigators were primarily interested in knowing the minimum effective dose of their preparations.

The necessity of vitamin E for normal embryonic growth in animals other than the rat and the mouse has not been established, but several suggestive observations have been made in the field of animal production. The use of wheat germ oil or of natural foodstuffs has lessened the significance of the experiments as regards vitamin E itself. In the case of herbivorous animals, the very real difficulty of supplying a ration which is adequate in all respects save vitamin E has sometimes been met by treating the food with an ethereal solution of ferric chloride, thereby introducing still further complications.⁵ Such a ration has been found to support normal growth and reproduction in goats and rabbits for several generations.²⁷ Thus seven original goats increased to forty-eight in fifty-four months with no reproductive disorders attributable to avitaminosis E. Twelve original rabbits littered 137 young in two years; there were infrequent reproductive disorders the cause of which is not yet ascertained.

The carefully controlled veterinary studies on cattle have been continued by Vogt-Møller.²⁸ Intramuscular or preferably subcutaneous injection of 20 cc. of "Fertilan",²⁹ a sterilized wheat germ oil, into otherwise normal cows that have repeatedly failed to become pregnant was followed by pregnancy in thirty-three out of

fifty instances. Similar results were reported by Tutt.³⁰ Large doses of wheat germ oil increased the size of rabbit litters,³¹ wheat germ meal in the diet of sows reduced the mortality of suckling pigs,³² but this improvement may have been due to other constituents. The reported occurrence of vitamin E in the queen bee's royal jelly³³ could not be confirmed.³⁴

The results obtained with chickens are more conclusive and trustworthy because the vitamin E content of the food of the hens and of their eggs as determined by rat assay can be correlated with the hatchability of the eggs and the viability of the young chicks.³⁵ From such experiments it appears that vitamin E may be a limiting factor in the hatchability of eggs and that one manifestation of its deficiency is a first-week embryonic mortality. This is greatly reduced by supplying vitamin E in the poultry ration. Agricultural journals are beginning to carry advertisements recommending the use of feeds enriched with biologically tested wheat germ oil. If there is any justification for this, it arises in part in the increasing tendency to introduce concentrates and already compounded rations into animal feeding practice. A shortage of vitamin E might result from the consumption of a more or less limited diet, depending on the nature of the constituents. It is conceivable that on more natural forage, which would ordinarily supply enough E, an occasional animal might exhibit symptoms of a shortage through faulty absorption or metabolism.

The embryonic development of chicks in eggs from hens on a vitamin E deficient ration has shed some light on the abnormalities causing death in the embryo. According to Adamstone,³⁶ cell proliferation in the mesoderm produces a lethal ring in the blastoderm, whose blood vessels are choked off and disintegrate; the embryo dies from loss of blood and starvation. Observations on the degeneration in the testis of the male fowl³⁷ led him to conclude that vitamin E is intimately associated with the nucleus during cell division and probably exerts an indirect controlling influence.

Since the comprehensive morphologic studies made by Evans and Burr on the rat and described in their memoir, several workers have confirmed their observations. Thus Urner³⁸ found the embryo apparently normal until the tenth day, after which there was rarefaction of the mesenchyme and failure of the blood forming tissues. In the ectoplacenta also there was

30. Tutt, J. F., quoted by Bay and Vogt-Møller.²⁵

31. Schioppa, Luigi: Experimental Researches on Vitamin E: IV. Researches on the Influence of Vitamin E on Fertility and the Bodily Condition of the Offspring, *Ztschr. f. Vitaminforsch.* 5: 22 (Jan.) 1936.

32. Auble, C. E.; Hughes, J. S., and Lienhardt, H. F.: The Influence of Vitamins B and E on Reproduction in Swine, *Proc. Am. Soc. Animal Production*, 1929, p. 133.

33. Hill, Leonard, and Burdett, E. F.: Fertility of Bees and Vitamin E, *Nature* 130: 540 (Oct. 8) 1932. The proper conduct of a biologic assay requires some experience; wheat germ oils are not alike in their vitamin E content and due care must be exercised in the preparation of concentrates (Evans, H. M.; Murphy, E. A.; Archibald, R. C., and Cornish, R. E.: Preparation and Properties of Vitamin E Concentrates, *J. Biol. Chem.* 108: 515 (Feb.) 1935).

34. Schoorl, P.: Vitamin E Research, *Ztschr. f. Vitaminforsch.* 5: 246 (Oct.) 1936. Mason, K. E., and Melampy, R. M.: Absence of Vitamin E in the Royal Jelly of Bees, *Proc. Soc. Exper. Biol. & Med.* 35: 459 (Dec.) 1936. Evans, H. M.; Emerson, Gladys A., and Ackert, J. E.: Alleged Vitamin E Content in Royal Jelly, *J. Econ. Entom.* 30: 642, 1937.

35. Barnum, G. L.: The Vitamin E Content of Eggs as Related to the Diet of the Hen and to Hatchability, *J. Nutrition* 9: 621 (May) 1935. Ender, Fredrik: Significance of Vitamin E in Poultry Husbandry, *Ztschr. f. Vitaminforsch.* 4: 106 (April) 1935. Barbas, W. C.: The Influence of the Fertility Vitamin on Egg-Laying Hens, *Landbouwkund. tijdschr.* 48: 669, 1936; through *Chem. Abstr.* 31: 3531 (May 20) 1937.

36. Adamstone, F. B.: The Effects of Vitamin E Deficiency on the Development of the Chick, *J. Morphol. & Physiol.* 52: 47 (Sept.) 1931.

37. Adamstone, F. B., and Card, L. E.: Effects of Vitamin E Deficiency on the Testis of the Male Fowl (*Gallus Domesticus*), *J. Morphol.* 54: 339 (Sept.) 1934. Adamstone, F. B.: Possible Relation of Vitamin E to Unrestricted Cell Division, *Science* 50: 450 (Nov. 16) 1934.

38. Urner, J. A.: The Intra-Uterine Changes in the Pregnant Albino Rat (*Mus Norvegicus*) Deprived of Vitamin E, *Anat. Rec.* 50: 175 (Aug.) 1931.

24. McArthur, C. S., and Watson, E. M.: The Selenium Dehydrogenation of α -Tocopherol, *Science* 86: 35 (July 9) 1937.

24a. Karrer, P.; Salomon, H., and Fritzsche, H.: Constituents of Plant Embryos. II: Neotocopherol, *Helv. Chim. Acta* 20: 1422 (6) 1937. John, W.: Cumotocopherol, *Ztschr. f. physiol. Chem.* 250: 11 (No. 1) 1937.

25. A more detailed exposition of the method of assay is given in the previous review¹ and elsewhere.⁹

26. Palmer, L. S.: Biological Assay of Vitamin E: Application to Wheat Germ and Wheat Germ Oil, *Proceedings of the American Society of Biological Chemists* 119: lxxv (June) 1937; *Indust. & Engin. Chem., Anal. Ed.* 9: 427 (Sept.) 1937.

27. Personal communication from Dr. B. H. Thomas, Ames, Iowa.

28. Bay, F., and Vogt-Møller, P.: Continued Studies on Treatment of Sterility in Cows and Breeding Sows with Wheat Germ Oil (Vitamin E), *Vet. J.* 90: 288, 1934.

29. Vogt-Møller, P.: On Estimation of the Vitamin E Content of the Wheat-Germ Oil Preparation "Fertilan" Mco., *Acta path. et microbiol. Scandinav.* 12: 115, 1935.

failure of the mesodermal elements. According to others,³⁰ the malnutrition of the embryos is due at first to the imperfect phagocytic action of the trophoblast and later to imperfect development of allantoic blood vessels.

The striking difference in response to vitamin E deprivation by male and female animals can be explained, superficially, by the fact that in the male the damage is done to a part of the animal's own tissue and may for this reason be irreversible in contrast to the reparable damage in the female, which is wrought not on her own tissues but on those of the fetus. Among the nutritional factors concerned in testicular degeneration, vitamins A and E are probably the most important. On diets low in A and containing abundant E, degeneration appears earlier than under reversed conditions.⁴⁰ At first believed to be very similar,⁴¹ the histologic pictures presented by the two conditions are different, as demonstrated in a comprehensive study by Mason.⁴² Deficiency of vitamin E produces excessive liquefaction of the chromatin material, first in the spermatozoa and spermatids and later in the less mature cells; spermatogenic activity ceases soon after the first appearance of injury, whereas in vitamin A deficiency it continues in spite of considerable depletion of the germinal epithelium.⁴³ A careful survey of all the facts available leads Mason to the conclusion that vitamin E plays some very essential rôle in nuclear activities involving chromatin and is indispensable, especially in those tissues in which cellular proliferation and differentiation are unusually rapid. Such are the testis in the male and the developing embryo in the female.

A possible quantitative difference in the requirements of the two sexes⁴⁴ may emerge from this conception, the male requirement being greater than the female. This cannot be determined until larger amounts of the various tocopherols become available for study. Awaiting similar proof is the assumption of sex specific forms of vitamin E.⁴⁵

Does vitamin E have any other functions in the animal economy beyond those concerned with reproduction? Its effect in increasing the number and viability of the young⁴⁶ is a common observation; vitamin E is probably not concerned with lactation. Its favorable influence on extra-uterine growth, first observed by

Evans and by others,⁴⁷ was overlooked by some,⁴⁷ perhaps because their experiments were of too short duration. Interest was renewed in the subject by Blumberg⁴⁸ and by Ringsted.⁴⁹ The former demonstrated a retardation of growth in young rats at the twelfth to the fourteenth week (in males from the very beginning), complete cessation of growth at from eighteen to twenty-two weeks, and serious malnutrition and some muscular disturbance at from thirty to forty weeks when the animals were maintained on a highly purified ration deficient in vitamin E. Addition to the diet of wheat germ, the unsaponifiable fraction of its oil, or of natural foods known to contain E, produced a resumption of growth whereas allied substances known not to contain E had no effect. Ringsted's animals (females) reached a plateau of growth and first showed dragging of the hind limbs at 160 Gm. and at from 5 to 6 months of age; the paresis and malnutrition gradually increased on his synthetic diet, which contained lard previously aerated for ten hours at 110 C. and which was thus very rancid. Unfortunately he was unable to try curative procedures, but animals on the same diet that had received test doses of wheat germ oil adequate for successful reproduction remained free of paralysis.

Later work confirmed the growth promoting effect of vitamin E but without demonstrating any paralysis when this was withheld. Martin⁵⁰ exactly duplicated the basal diet and management that Blumberg used; the weights when growth ceased were slightly higher in both sexes, and the giving of a vitamin E concentrate restored growth. Attempts by various means to segregate a growth factor and a fertility factor in the concentrate led him to suggest that there were two agencies rather than a quantitative difference between the required amounts of a single substance. The total duration of his experiments is not indicated.

In a further study by Emerson and Evans,⁵¹ female rats on an E-deficient diet were surpassed by controls only after 4 to 5 months of age and at 250 Gm. in weight, and massive doses of wheat germ oil restored growth. At 19 months of age untreated animals had an unsteady gait but no paralysis. Olcott and Mattill⁵² also found no difference at 4 months between female animals on a synthetic E-deficient diet in which all the lipid constituents were of known composition, whether they were given a highly purified and tested concentrate of E or not. Male animals, on the other hand, were surpassed by controls from the age of 2 months; at 5 months the latter were 10 per cent heavier, but the former continued to grow and there was no paralysis. In both of these investigations an increased fat content (lard or ethyl esters of the fatty acids of edible fats) in the diet had a temporary stimulating effect on growth. Probably none of these studies were continued for a long enough time, for recently Burr and his co-workers⁵³ reported paralysis of the hind limbs in

39. Zagami, V., and Sindoni, M.: Vitamin E Deficiency and Pregnancy in Rats, *Riv. di pat. sper.* 12:1 (March) 1934; through *Physiol. Abstr.* 20:756 (Jan.) 1936.

40. Evans, H. M.: Testicular Degeneration Due to Inadequate Vitamin A in Cases Where E Is Adequate, *Am. J. Physiol.* 99:477 (Jan.) 1932.

41. Korenchevsky, V.: Sterility in Males on Diets Deficient in Vitamin A and E, *Proc. Roy. Soc. Med.* 26:1187 (July) 1933.

42. Mason, K. E.: Differences in Testis Injury and Repair After Vitamin A Deficiency, Vitamin E Deficiency and Inanition, *Am. J. Anat.* 52:153 (March) 1933.

43. According to C. A. Pfeiffer (Some Factors Influencing the Vitalization of the Ovarian Graft and the Production of Sex Hormones in the Male Rat, *Endocrinology* 21:260 (March) 1937) diphtheria toxin produces a rapid degeneration of the germinal epithelium similar to that of vitamin E deprivation, except that it is reversible.

44. Waddell, James; Steenbock, Harry, and Hart, E. B.: Growth and Reproduction on Milk Diets, *J. Nutrition* 4:53 (May) 1931. Waddell, James: Male Sterility on Milk Diets, *J. Nutrition* 4:67 (May) 1931. Keil, H. L., and Nelson, V. E.: Preservation of Fertility in Male and Female Rats on a Supplemented Milk Diet, *Proc. Soc. Exper. Biol. & Med.* 33:490 (Jan.) 1936.

45. Grijns, G., and Dingemans, E.: Diet and Reproduction: IV. The Bipartite Nature of Vitamin E, *Proc. Acad. Sc. Amsterdam* 36:242, 1933; through *Chem. Abstr.* 27:3974 (Aug. 20) 1933. Martino, G.: The Dual Nature of Vitamin E, *Quadrini nutrizione* 1:180, 1934; through *Chem. Abstr.* 30:4546 (July 10) 1936. Cunningham, I. J., and Hopkirk, C. S. M.: Dietary Protein in Relation to Sterility, *New Zealand J. Sc. Tech.* 17:420 (No. 1) 1935; through *Chem. Abstr.* 30:142 (Jan. 10) 1936. Martino, G., and Knallinsky, A.: The Vitamin E Content of the Manioc Root, *Boll. soc. ital. biol. sper.* 8:819, 1933; through *Chem. Abstr.* 29:3005 (May 10) 1935. Arthur, A.: Feeding Rats Exclusively with Milk Powders of the Same Origin but of Different Butterfat Contents, *Bull. Soc. scient. d'hyg. aliment.* 2:4218, 1936; through *Chem. Abstr.* 30:7639 (Nov. 10) 1936.

46. Schioppa, Luigi: Vitamin E: III. Influence of Vitamin E on Normal Animals, with Respect to Fertility, Size of Litter, and Somatic Characters, *Ztschr. f. Vitaminforsch.* 4:167 (July) 1935.

47. Hogan, A. G.; Hunter, J. E., and Shrewsbury, C. L.: The Relation of Diet to Bodily Activity and to Capacity to Withstand Unfavorable Circumstances, *Bull.* 256, University of Missouri Experiment Station, 1927, p. 50. Marchesi, Franco: Vitamin E and Reproductive Function in Albino Rats, *Sperimentale, Arch. di biol.* 89:119, 1935; through *Chem. Abstr.* 29:5895 (Sept. 10) 1935.

48. Blumberg, Harold: A Growth Deficiency Disease, Curable by Wheat Germ Oil, *J. Biol. Chem.* 108:227 (Jan.) 1935.

49. Ringsted, Axel: A Preliminary Note on the Appearance of Paresis in Adult Rats Suffering from Chronic Avitaminosis E, *Biochem. J.* 20:788, 1935.

50. Martin, G. J.: Vitamin E, *J. Nutrition* 12:679 (June) 1937.

51. Emerson, Gladys A., and Evans, H. M.: The Effect of Vitamin E Deficiency upon Growth, *J. Nutrition* 1:169 (Aug.) 1937.

52. Olcott, H. S., and Mattill, H. A.: Vitamin E and Growth, *J. Nutrition* 1:4:305 (Sept.) 1937.

53. Burr, G. O.; Brown, W. R., and Moseley, R. L.: Paralysis in Old Age in Rats on a Diet Deficient in Vitamin E, *Proc. Soc. Exper. Biol. & Med.* 36:780 (June) 1937.

22 months old female rats that had been on a highly purified E-deficient diet from weaning.

Equally mysterious is the paralysis in suckling rats from vitamin E-deficient mothers. First observed and studied by Evans, its incurable nature and its prevention by wheat germ oil and vitamin E concentrates have been confirmed repeatedly.⁵⁴ This condition was originally thought to be of nervous origin,⁵⁵ but it has now been definitely associated with skeletal muscles.⁵⁶ The muscles exhibit extensive degeneration and necrosis and their microscopic changes are not to be distinguished from those of muscular dystrophy in herbivora discussed later in this report; less extensive lesions may be present in the musculature of animals showing no external symptoms of paralysis or weakness.

The serious paralysis in first generation adult rats (Ringsted) was associated with a diet containing very rancid fat. The antioxygenic effect of the tocopherols and other inhibitors has up to now been considered as limited to the dietary mixture in which they are found and not as extending into the organism and its physiologic processes. Possibly the prolonged exposure of tissues to autoxidizing fatty acids and their products is as damaging to their chemically sensitive constituents as it is to the autoxidizable constituents of experimental diets. Support for this suggestion is found in the observations of Waddell and Steenbock⁵⁷ to the effect that on a ration treated with ferric chloride female rats were unable to use even large stores of vitamin E and did not acquire this ability until from four to six weeks after transfer to a nonoxidized basal ration. A further interesting item has recently come to notice;⁵⁸ subcutaneous injection (0.1 Gm.) of a concentrate prepared from rancid fat and containing aldehydes and ketones produced resorption of the embryos or failure of implantation^{58a} and fertility rapidly returned on discontinuance of the injections. Confirmation and interpretation of these observations will be significant for a proper understanding of the functions of vitamin E and its allied substances.

The relation of these various instances of paralysis to the muscular dystrophy first observed in herbivorous animals by Goettsch and Pappenheimer⁵⁹ is not clear. The latter type of dystrophy was first produced in guinea pigs and rabbits, even in utero,⁶⁰ on a diet deficient in vitamin E, but the addition of this to the diet did not prevent the development of the disease. On the same deficient diet, rats did not manifest the disease. According to Madsen, McCay and Maynard,⁶¹ cotton-

seed oil (containing a concentrate of vitamins A and D) in place of cod liver oil afforded a high degree of protection, and one of the causative factors resided in the saponifiable fraction of cod liver oil. Recently McCay, Paul and Maynard⁶² reported that the untoward effects produced by cod liver oil in the diet of herbivora were abolished when hydrogenated cod liver oil replaced the natural product. Muscle lesions in guinea pigs were entirely prevented by this substitution. Fats that easily become rancid are greatly stabilized by hydrogenation.⁶³

The experiments of Morgulis and Spencer⁶⁴ indicate that at least two factors are involved in this muscular degeneration; one of them is easily destroyed by treatment of the ration with ethereal ferric chloride. Both factors are present in fresh green alfalfa or in whole wheat germ; one of them is found in wheat germ oil, the other in lettuce or in dry alfalfa. The value of their metabolic and blood studies⁶⁵ is limited by the fact that inanition accompanies the dystrophy. The oxygen consumption of these degenerated muscles seems to be elevated,⁶⁶ but the metabolic rate of the afflicted animals is normal.⁶⁷

What value these observations may have for the understanding of human muscular dystrophy should be and is doubtless already a subject for careful inquiry. It must also be determined whether the resistance of rats is evidence of a qualitative or quantitative difference between them and the herbivora.

A functional relation between vitamins and internal secretions has been an intriguing if not very fruitful idea. Naturally, a possible connection of vitamin E with the sex hormones came to mind. It was Verzar⁶⁸ who first stated that vitamin E acted like anterior hypophyseal hormone in inducing precocious sexual maturity in young female rats but not in castrates and that E might be necessary for the formation of the hypophyseal hormone. Szarka⁶⁹ even concluded that E might be a building stone or precursor of the ovarian hormone, but since estrus is usually normal in vitamin E deficiency so direct a relationship is physiologically inadmissible. These views have found experimental contradiction in the work of many investigators;⁷⁰ vitamin E does not exhibit gonadotropic or luteinizing effects, nor do extracts of anterior pituitary, or pregnancy urine or

54. Morelle, Jean: Influence of Deprivation of Vitamin E on Lactation in the Rat, *Compt. rend. Soc. de biol.* **108**: 804 (Nov. 27) 1931. Olcott and Mattill.⁶ Mason.⁴²

55. Lipschutz, Daniel: Degeneration of Nerve Tracts in Young Rats Lacking Vitamin E, *Rev. neurol.* **65**: 221 (Feb.) 1936.

56. Olcott, H. S.: Paralysis in the Young of Vitamin-E Deficient Female Rats, *Proceedings of the American Society of Biological Chemists* **119**: lxxiv (June) 1937. *J. Nutrition* **15**: 221 (March) 1938.

57. Waddell, James, and Steenbock, Harry: Vitamin E in Iron Treated Dry Rats, *J. Nutrition* **4**: 79 (May) 1931.

58. Kudryashov, B. A., and Agatov, P. A.: Sterilization by Means of Decomposed Fat, *Ginekologia i Akusherstvo* **6**: 1, 1935; through *Chem. Abstr.* **31**: 1873 (March 20) 1937.

58a. In this connection see also Bacharach, A. L.; Alchorne, Edith, and Glynn, H. E.: The Influence of Vitamin E Deficiency on Implantation, *Biochem. J.* **31**: 2287 (Dec.) 1937.

59. Goettsch, Marianne, and Pappenheimer, A. M.: Nutritional Muscular Dystrophy in the Guinea Pig and Rabbit, *J. Exper. Med.* **54**: 145 (Aug.) 1931. Pappenheimer, A. M., and Goettsch, Marianne: Nutritional Myopathy in Ducklings, *ibid.* **59**: 35 (Jan.) 1934.

60. Pappenheimer, A. M., and Goettsch, Marianne: Transmission of Nutritional Muscular Dystrophy to Rabbits in Utero, *Proc. Soc. Exper. Biol. & Med.* **34**: 522 (May) 1936.

61. Madsen, L. L.; McCay, C. M., and Maynard, L. A.: Synthetic Diets for Herbivora with Special Reference to the Toxicity of Cod Liver Oil, *Bull. 178*, Cornell University Agricultural Experimental Station, 1935, p. 3; *Proc. Soc. Exper. Biol. & Med.* **30**: 1434 (June) 1933. Madsen, L. L.: The Comparative Effects of Cod Liver Oil, Cod Liver Oil Concentrate, Lard and Cottonseed Oil in a Synthetic Diet on the Development of Nutritional Muscular Dystrophy, *J. Nutrition* **11**: 471 (May) 1936.

62. McCay, C. M.; Paul, Henry, and Maynard, L. A.: The Removal by Hydrogenation of the Properties of Cod Liver Oil Which Are Harmful to Herbivora, read before the meeting of the American Chemical Society in Rochester in September 1937.

63. Nutritional encephalomalacia in chicks was completely prevented by including various vegetable oils in the diet (Pappenheimer, A. M., and Goettsch, Marianne: Protection Afforded by Certain Vegetable Oils Against Nutritional Encephalomalacia in Chicks, *Proc. Soc. Exper. Biol. & Med.* **31**: 777 [April] 1934). Vegetable oils contain inhibitors;⁹ animal fats do not.

64. Morgulis, Sergius, and Spencer, H. C.: A Study of the Dietary Factors Concerned in Nutritional Muscular Dystrophy, *J. Nutrition* **11**: 573 (June) 1936.

65. Morgulis, Sergius, and Spencer, H. C.: Studies on the Blood and Tissues in Nutritional Muscular Dystrophy, *J. Nutrition* **12**: 173 (Aug.) 1936; *Metabolism Studies in Nutritional Muscular Dystrophy*, *ibid.* **12**: 191 (Aug.) 1936.

66. Victor, Joseph: Metabolic and Irritability Changes in Nutritional Myopathy of Rabbits and Ducks, *Am. J. Physiol.* **108**: 229 (April) 1934. Madsen.⁶¹

67. Wood, E. L., and Hines, H. M.: Effect of Vitamin E Deficient and Muscular Dystrophy-Producing Diet on Metabolism of Guinea Pigs, *Proc. Soc. Exper. Biol. & Med.* **36**: 746 (June) 1937.

68. Verzar, Friedrich: The Influence of Diet on Internal Secretion, *Proc. Staff Meet., Mayo Clin.* **4**: 351 (Dec. 4) 1929.

69. Szarka, A.: The Action of E on Ovarian Function: XI. Estrus and Avitaminosis, *Arch. f. d. ges. Physiol.* **223**: 637 (Dec. 10) 1929.

70. Csik, Lajos: Mechanism of the Action of Vitamin E: Action of Menformone, *Magyar Biol. Kutató Intézet Munkái* **5**: 179, 1932; through *Chem. Abstr.* **27**: 2183 (May 10) 1933. Kudryashov, B. A.: Vitamins and the Female Sex Hormone: Is Vitamin E Necessary for the Synthesis of the Female Sex Hormone in Females? *Dynamics Development (U. S. S. R.)* **10**: 37, 1935; through *Chem. Abstr.* **30**: 4204 (June 20) 1936. Diakov, F. A., and Krizenecky, J.: Vitamin E and Pituitary Hormone: I and II, *Proc. Soc. Exper. Biol. & Med.* **31**: 59 (Oct.) 1933. Saphir, William: Vitamin E and the Gonads, *Endocrinology* **20**: 107 (Jan.) 1936. Geller, F. C.: Vitamin E and Hormones, *Arch. f. Gynäk.* **156**: 345 (Dec.) 1933. Nelson, W. O.: Studies on the Anterior Hypophysis: III. The Anterior Hypophysis in Vitamin E-Deficient Rats, *Anat. Rec.* **56**: 241 (June) 1933. Olcott and Mattill.⁶

extracts of corpus luteum prevent reproductive failure in rats on vitamin E-deficient diets.

Although recently denied,⁷¹ there seems no doubt that, as first noted by van Wagenen,⁷² cellular changes take place in the anterior hypophysis of vitamin E-deficient male animals;⁷³ so-called castration cells appear, which are enlarged vacuolated basophile cells, but not of the signet ring type observed in surgical castrates. The condition is more marked in castrates than in vitamin E-deficient males; the glands of vitamin E-deficient female animals remain normal. E-deficient male pituitaries are more potent in the gonad-stimulating hormone than glands from normal animals and less potent than those of castrates, whereas E-deficient female glands do not differ from normal. This sex-different response in the pituitary would support the belief that the changes observed are directly the result of gonadal degeneration and are only indirectly concerned with vitamin E. The same significance probably attaches to the progressive hypertrophy of the mammary glands of vitamin E-deficient rats throughout a resorption gestation.⁷⁴

More recently however, biologic assay of pituitaries of E-free female rabbits by Rowlands and Singer⁷⁵ has given contrary results; such pituitaries demonstrated a decreased content of the luteinizing or ovulation-producing substance that is active in the rabbit, but such deficiency could not be considered a primary cause of the fetal resorption. The finding of hypoplastic thyroids in female E-deficient rats,⁷⁶ with return to normal appearance on administering E, suggests that thyrotropic as well as gonadotropic activity of the pituitary may be altered in the absence of vitamin E. Cretinism in young E-deficient rats has also been reported.⁷⁷

Interest in the possible relationship of vitamin E to malignancy was awakened by Davidson's observations on tar cancer in susceptible mice.⁷⁸ The incidence of such cancer was delayed and less frequent, and the animals remained in health longer, on an E-containing diet than on one deficient in it. Davidson acknowledged that the E-containing diet was better in other respects also, notably in vitamins B₁ and B₂. Earlier observations of Zagami⁷⁹ on the growth of grafts of Jensen sarcoma in rats demonstrated no significant differences as between animals with and without E in the diet. In the hands of Haddow and Russell,⁸⁰ liberal addition of wheat germ to the diet had no influence on the subsequent emergence of benzpyrene tumors, and unpublished work from this laboratory⁸¹ on the incidence and metastasis of methyl cholanthrene cancers in both ordinary and susceptible mice is to the same effect. On

the other hand, Adamstone⁸² found that the feeding of a ferric chloride treated diet to young chicks caused the development of characteristic visceral lesions, lymphoblastomas, with destruction of normal tissue and invasion by new cell growths. The uncertainty of the character of ferric chloride damage forbids any conclusions at this stage of study.⁸³ In this connection two unconfirmed reports should be mentioned; the healing of skin wounds in rats is hastened by a diet rich in E⁸⁴ or by external application of a concentrate.⁸⁵

THERAPY

Definite proof for the value of vitamin E as a remedy for sterility in human beings is manifestly difficult to secure. Many causes and conditions have been shown to be associated with human sterility, and, so far as animal experiments indicate, vitamin E is directly concerned with only one phase of the female reproductive process, namely, the blood supply and nutrition of the embryo, and in the male with the maintenance of testicular function. By analogy, an inadequacy of vitamin E in the human male might therefore be revealed either by nonviability or by complete absence of sperm; in the female by abortion, the physiologic counterpart of resorption in rats. Such analogies are unsafe as between animals of different species, for they may imply too much or too little.

Early observations¹ on the value of vitamin E in habitual abortion have been continued and amplified. Vogt-Møller⁸⁶ has reported two series of twenty and fifty-two cases in which no anatomic or physiologic abnormalities could explain repeated abortion. Administration of 3 Gm. daily of a purified wheat germ oil preparation resulted in the birth of living children in seventeen and thirty-eight cases, respectively. Watson and Tew⁸⁷ reported success in thirty-four of forty-six cases of previous abortion; wheat germ oil may also be useful as an adjunct in threatened abortion but is of no avail in the treatment of nonfertility from other causes. The success of Currie⁸⁸ seems to have been still more pronounced. By administering daily from the time of first attendance to the onset of labor a 3 minim (0.2 cc.) capsule containing a concentrate (Glaxo) from 5 Gm. of wheat germ oil, he secured twenty-three normal births out of twenty-four cases in which the aggregate seventy-three previous pregnancies had resulted in only 14 per cent of living children.

Massive doses of wheat germ oil have also, according to Shute,⁸⁹ been useful in abruptio placentae and have

71. Müller, J. H., and Müller, C.: "Histological Changes in the Adenohypophysis of Rats on a Vitamin E Deficient Diet," *Proc. Soc. Exper. Biol. Med.* **369** (May) 1937; through Chem. Abstr. **31**: 1.

72. van Wagenen, Gertrude: Histological Changes in the Male Rat Hypophysis Following Degeneration of the Germinal Epithelium, *Anat. Rec.* **29**: 398 (March) 1925.

73. Stein, S. I.: Experimental Studies on the Hypophysis Cerebri: IV. The Effect of Vitamin E Deficiency in the Female Albino Rat. *J. Nutrition* **9**: 611 (May) 1935. Geller,⁷⁰ Nelson.⁷⁰

74. Urner, J. A.: The Changes in the Mammary Glands of Pregnant Albino Rats Deprived of Vitamin E, *Sect. Obst., Gynec. & Abdom. Surg.*, A. M. A., 1930, p. 34.

75. Rowlands, I. W., and Singer, Eleanor: Gonadotropic Activity of the Pituitaries of Vitamin E Deficient Rats, *J. Physiol.* **86**: 323 (March) 1936.

76. Singer, Eleanor: Effects of Vitamin E Deficiency on the Thyroid Gland of the Rat, *J. Physiol.* **87**: 287 (Aug.) 1936.

77. Barrie, M. M. O.: Effect of Vitamin E Deficiency on the Thyroid, *Nature* **139**: 286 (Feb. 13) 1937.

78. Davidson, J. R.: An Attempt to Inhibit the Development of Tar Carcinoma in Mice, *Canad. M. A. J.* **31**: 486 (Nov.) 1934; **32**: 364 (April) 1935.

79. Zagami, V.: Effect of Vitamin E on Development of Rat Sarcoma, *Riv. di pat. spec.* **11**: 381 (Dec. 31) 1933; through *Physiol. Abstr.* **19**: 348 (Aug.) 1934.

80. Haddow, Alexander, and Russell, Helen: The Influence of Wheat-Germ Oil in the Diet on the Induction of Tumors in Mice, *Am. J. Cancer* **29**: 363 (Feb.) 1937.

81. Carruthers, Christopher: Unpublished data.

82. Adamstone, F. B.: A Lymphoblastoma Occurring in Young Chicks Reared on a Diet Treated with Ferric Chloride to Destroy Vitamin E, *Am. J. Cancer* **28**: 540 (Nov.) 1936.

83. Sufficient opportunity and time have not yet been afforded for verification of a striking announcement recently made by Rowntree and his co-workers (Rowntree, L. G.; Steinberg, A.; Dorrance, G. M., and Ciccone, E. F.: Sarcoma in Rats from the Ingestion of a Crude Wheat Germ Oil made by Ether Extraction, *Am. J. of Cancer* **31**: 359 [Nov.] 1937). When rats on an ordinary stock ration were fed a crude preparation of ether-extracted wheat germ oil, malignant tumors developed in the peritoneal cavity. They had the characteristics of spindle cell sarcoma and retained their malignancy through successive transplantations. Various preparations of refined wheat germ oil, extracted or expressed, and other vegetable and animal oils had no such effect. Whatever the agent may be, it is not vitamin E.

84. Pegreff, Enrico: Influence of Vitamin E on Healing of Skin Wounds, *Pathologica* **27**: 543 (Aug. 15) 1935.

85. Léránth, Géza, and Frank, László: Significance of Vitamin E in Dermatology, *Orvosi hetil.* **80**: 778 (Aug. 15) 1936; through *Chem. Abstr.* **30**: 7634, 1936.

86. Vogt-Møller, P.: Treatment of Sterility and Habitual Abortion with Wheat Germ and Oil of Wheat Germ (Vitamin E), *Hospitalstid.* **76**: 621 (June 1) 1933; *Acta obst. et gynec. Scandinav.* **13**: 219, 1933; *The Treatment of Patients Subject to Chronic Abortion with Wheat-Germ Oil* (Vitamin E), *Klin. Wehnschr.* **15**: 1883 (Dec. 19) 1936.

87. Watson, E. M., and Tew, W. P.: Wheat Germ Oil (Vitamin E) Therapy in Obstetrics, *Tr. Am. A. Obst., Gynec. & Abdom. Surg.* **48**: 189, 1935. Watson, E. M.: Clinical Experiences with Wheat Germ Oil (Vitamin E), *Canad. M. A. J.* **34**: 134 (Feb.) 1936.

88. Currie, D. W.: Vitamins for Habitual Abortion, *Brit. M. J.* **1**: 752 (April 11) 1936.

89. Shute, Evan: Early Diagnosis of Abruptio Placentae and Its Treatment with Wheat Germ Oil, *Am. J. Obst. & Gynec.* **23**: 429 (March) 1937.

prevented progress of these cases to a severe stage of placental detachment. This clinical experience followed the observation⁹⁰ that the blood serum of aborting women had an increased resistance to tryptic proteolysis and that the serum of rats acquired the same property after about four months on a vitamin E-deficient diet; normal digestibility was restored in both cases by administering vitamin E. There is as yet no physiologic explanation for this.

More clinical evidence, obtained under carefully controlled conditions, is greatly needed to establish the usefulness of vitamin E therapy in abnormal human reproduction. Until this is at hand, attempts to produce a market for wheat germ oil among prospective parents generally are to be deprecated; so also is the suggested threat of national dietary sterility, in view of the widespread distribution of vitamin E in the foods belonging in a well balanced diet. Individual cases of inadequacy, due perhaps to faulty absorption or metabolism will not be understood until more is known about the chemistry and physiology of vitamin E.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

SULFANILAMIDE (See New and Nonofficial Remedies, 1938, p. 450).

Sulfanilamide Tablets, 5 grains.

Prepared by Schieffelin & Co., New York, N. Y. No U. S. patent or trademark.

MANDELIC ACID (See New and Nonofficial Remedies, 1938, p. 292).

Mandelic Acid-Calco.—A brand of mandelic acid—N. N. R.

Manufactured by the Calco Chemical Company, Inc., Bound Brook, N. J. No U. S. patent or trademark.

SODIUM CACODYLATE (See New and Nonofficial Remedies, 1938, p. 102).

Hyposols Sodium Cacodylate, 3/4 grain (0.048 Gm.), 1 cc.

Prepared by The Drug Products Co., Long Island City, N. Y.

Hyposols Sodium Cacodylate, 1 1/2 grains (0.10 Gm.), 1 cc.

Prepared by The Drug Products Co., Long Island City, N. Y.

Hyposols Sodium Cacodylate, 3 grains (0.194 Gm.), 1 cc.

Prepared by The Drug Products Co., Long Island City, N. Y.

Hyposols Sodium Cacodylate, 5 grains (0.324 Gm.), 1 cc.

Prepared by The Drug Products Co., Long Island City, N. Y.

Hyposols Sodium Cacodylate, 7 1/2 grains (0.5 Gm.), 5 cc.

Prepared by The Drug Products Co., Long Island City, N. Y.

CEVITAMIC ACID (See New and Nonofficial Remedies, 1938, p. 480).

Cevitamic Acid-P. D. & Co.—A brand of cevitamic acid—N. N. R.

Manufactured by Parke, Davis & Co., Detroit. No U. S. patent or trademark.

Tablets Cevitamic Acid-P. D. & Co., 25 mg.

CHEPLIN'S EPINEPHRINE HYDROCHLORIDE SOLUTION (See New and Nonofficial Remedies, 1938, p. 232).

The following dosage forms have been accepted:

Cheplin's Epinephrine Hydrochloride Solution, 1:1,000, 10 cc.: marketed in rubber stoppered vials for parenteral administration.

Cheplin's Epinephrine Hydrochloride Solution, 1:1,000, 30 cc.: Marketed in rubber stoppered vials for parenteral administration and in screw cap vials for topical administration.

90. Shute, Evan: Resistance to Proteolysis Found in the Blood Serum of Aborting Women, *J. Obst. Gynaec. Brit. Emp.* 42: 1071, 1085 (Dec.) 1935; Relation of Deficiency of Vitamin E to Antiproteolytic Factor Found in Serum of Aborting Women, *ibid.* 43: 74 (Feb.) 1936.

Council on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED.

FRANKLIN C. BING, Secretary.

CHOCALOSE

Manufacturer.—Borchardt Malt Extract Company, Chicago.

Description.—A chocolate flavored drink base containing powdered malt extract, chocolate, maltose, dextrose, bone calcium phosphate, and iron and ammonium citrate.

Manufacture.—The ingredients in formula proportions are mixed, resulting in a heavy liquid syrup. The mixture is dried to powder in vacuum driers and ground.

Analysis (submitted by manufacturer).—Moisture 3.1%, total solids 96.9%, ash 5.5%, fat (ether extract) 7.2%, protein ($N \times 6.25$) 8.3%, reducing sugars (as maltose) 66.3%, dextrose 9.5%, carbohydrates (by difference) 75.9%, caffeine 0.06%, theobromine 0.23%, calcium (Ca) 1.36%, phosphorus (P) 1.50%, iron (Fe) 0.094%, magnesium (Mg) 0.90%, potassium (K) 0.17%, sodium (Na) 0.01%, sulfur (S) 0.06%, copper a trace, manganese a trace, zinc a trace.

Calories.—4.0 per gram; 114 per ounce.

Vitamins.—74 International units of vitamin B₁ per ounce or 2.59 International units per gram.

PRUDENCE MACARONI WITH BEEF SAUCE

Manufacturer.—Boston Food Products Company, Boston.

Description.—Canned macaroni containing tomato purée, hydrolyzed wheat protein product, onion, beef, olive oil, cracker meal, vegetable shortening and seasoning.

Manufacture.—Ground onions and ground beef are sautéed in hot vegetable oil. The tomato purée, water and wheat protein product, which is used for flavoring purposes, are added and the mixture is boiled; the cracker meal and seasoning are then added and the mixture is boiled again. The cans are partly filled with the sauce and then the desired amount of cooked macaroni is added and lastly enough sauce is added to fill the cans. The cans are passed through rotary steam exhausters for five minutes at 180 F., sealed, heat processed and cooled.

Analysis (submitted by manufacturer).—Moisture 81.8%, total solids 18.2%, ash 1.2%, fat (ether extract) 2.0%, protein ($N \times 6.25$) 3.6%, crude fiber 0.1%, carbohydrates other than crude fiber (by difference) 11.3%.

Calories.—0.8 per gram; 22.7 per ounce.

SUNNY DELL BRAND EVAPORATED MILK

Manufacturer.—Pevely Dairy Company, St. Louis.

Description.—Unsweetened, sterilized, evaporated milk.

Manufacture.—Milk from company inspected farms is tested, preheated, evaporated under vacuum, homogenized, cooled, standardized, filled into cans, sealed and sterilized.

Analysis (submitted by manufacturer).—Moisture 73.9%, total solids 26.1%, ash 1.3%, fat 7.9%, protein ($N \times 6.38$) 7.5%, lactose 8.9%.

Calories.—1.37 per gram; 40 per ounce.

MRS. PALEY'S BABY FOOD—STRAINED FRIJOLE BEANS

Manufacturer.—Paley-Sachs Food Company, Houston, Texas.

Description.—Canned, cooked, sieved frijole beans.

Manufacture.—Dried frijole beans are soaked, pressure cooked, sieved, filled into glass jars, vacuum sealed and heat processed.

Analysis (submitted by manufacturer).—Moisture 77.0%, total solids 23.0%, ash 1.1%, fat (ether extract) 0.2%, protein ($N \times 6.25$) 5.7%, crude fiber 1.0%, reducing sugars as dextrose 0.2%, sucrose 1.2%, total carbohydrate other than crude fiber (by difference) 15.0%, iron (Fe) 0.0013%, phosphorus (P) 0.090%, calcium (Ca) 0.042%.

Calories.—0.8 per gram; 22.7 per ounce.

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SATURDAY, MAY 28, 1938

MISINFORMED SENATE PASSES BILL
FAVORING OSTEOPATHY

Senator Burke of Nebraska on Jan. 29, 1937, introduced a bill¹ to amend the United States Employees' Compensation Act so as to give osteopaths the same status under that act as is given to qualified physicians. On Feb. 11, 1937, Representative Drew of Philadelphia, himself an osteopath, introduced a bill² in the House of Representatives identical in its terms with Senator Burke's bill. These bills were referred respectively to the Senate and the House Committees on the Judiciary.

On behalf of the American Medical Association, protests were promptly filed and requests made that the American Medical Association be heard in opposition to such legislation. The situation was discussed editorially in THE JOURNAL, Feb. 20, 1937. Letters were written to secretaries of all state medical associations of states represented on the two congressional committees before which the bills were pending, suggesting that protests be filed with the two committees.

A subcommittee of the House Committee on the Judiciary gave a hearing on the bill, June 4, 1937, at which the American Medical Association was represented. The subcommittee later discussed with the Association amendments to the bill proposed by its osteopathic promoters. The subcommittee was informed that the amendments would not remove the opposition of the American Medical Association to the bill because that opposition was based on the unfitness of osteopaths generally to perform the duties that they would be liable to be called on to perform if the bill was enacted. Nevertheless, the bill was favorably reported by the committee, April 21, 1938. This situation was called to the attention of the medical profession by an editorial in THE JOURNAL, April 30, and to the attention of the several state medical associations by letter, with a view to eliciting protests by them. The bill, however, was reached on the Consent Calendar May 2, the ninth busi-

ness day after it was reported, and, there being no objection to its consideration, the bill as reported by the committee was passed without a voice being raised in opposition and with no debate whatever. The bill then went to the Senate and was there referred to the Committee on the Judiciary, in which its companion bill, introduced by Senator Burke, S. 1233, was pending. Notwithstanding the protest of the American Medical Association and protests that had been filed on behalf of state medical associations and without granting a hearing and even without referring the bill to a subcommittee for study and report, the Senate committee, May 9, ordered a favorable report on the bill.

When it was learned that the committee had taken that action on the basis of a statement made to it that the amendments inserted by the House of Representatives had removed all objection raised by the American Medical Association and others to the bill, a telegram was sent to Senator Ashurst of Arizona, chairman of the committee, informing him that the amendments had in no way diminished the opposition of the Association to the proposed legislation. His attention was called to the pending protest of the American Medical Association and its request for a hearing, and he was urged to take such action as might be necessary to give the Association an opportunity of showing why the proposed legislation should not be enacted. To this Senator Ashurst replied that the telegram would be laid before the Committee on the Judiciary for attention and consideration. Letters were promptly sent to state medical associations in the states represented on the committee and to certain other state medical associations calling their attention to the situation and urging their aid in defeating the proposal to place osteopaths throughout the country on the same basis as qualified physicians under the United States Employees' Compensation Act. The response by the state medical associations appealed to was general and vigorous.

Nevertheless, no action was taken to recommit the bill. It was called up in the Senate on May 18, at which time Senator King of Utah, without formally objecting to consideration of the bill, called attention to the fact that he had received a number of communications objecting to it and insisting on opportunities to be heard. To Senator King, Senator Burke made the following remarkable reply:

"The representatives of the medical societies suggested an amendment which has been put into the bill as it now stands. Those representatives, presumably speaking for all the national medical societies, have withdrawn their objection completely, and say that the bill is now all right."

Senator Burke reiterated later that the physicians stated they had no further objection to the bill, in view of the amendments that had been added by the House of Representatives. The bill was thereupon passed.

1. S. 1233, Seventy-Fifth Congress.
2. H. R. 4650, Seventy-Fifth Congress.

As far as the American Medical Association is informed, no physician authorized to speak or act for organized medicine took any part in framing the amendments that were added in the House of Representatives. These amendments, incidentally, are utterly misleading, for they do nothing more than provide that osteopaths in the several states shall limit themselves to osteopathic treatment as authorized by the laws of the states. Osteopaths would have been bound to observe such limitations without any such amendments.

The identity of "representatives, presumably speaking for all the national medical societies," on whom Senator Burke relied when he informed the Senate as to the representation is a mystery.

The whole incident gives rise to serious thought on the part of those familiar with the facts of the case as to the possibility of similarly misinformed actions in other cases.

ATMOSPHERIC CONTAMINATION

The study of air pollution in our large cities has been enormously stimulated. Every one is aware of the smoke pall which hangs over us; many are disturbed as to possible deleterious effects on our health. The investigations of the Mellon Institute of Industrial Research from 1911 to 1914 disclosed that the economic loss in the Pittsburgh area alone was \$10,000,000 annually. This cost was principally due to waste fuel, increased cleaning bills, ruined merchandise and corrosion of buildings. The problem is not, however, confined to cities of the United States. The recent study by Barrett¹ on atmospheric pollution in Toronto employed the methods developed by the committee for investigation of such fouling in Great Britain. Deposited impurity was measured at three locations within and at one location outside the city. Total solids deposited at the three locations within the city averaged 341, 358 and 610 tons per square mile annually, as compared with an annual deposit of 133 tons in the area outside the city. During the winter the average hourly suspended impurity was less than that found in London, England, but almost identical in amount with that found in the five cities of the United States showing maximum pollution. During the summer, in fact, more impurity was suspended in Toronto air than was found in the five United States cities. The comparison of the air on Sundays and week days showed the major part of Toronto's pollution to be of nonindustrial origin. Although, as Barrett points out, definite proof is lacking that smoke is significant from the standpoint of health, further studies may substantiate the alleged harmful effects. Even without such proof, however, purely economic and esthetic considerations should be sufficient to increase the control of the situation.

A report bearing on another phase of this problem has been published by Buchbinder and his collaborators.² This study was aimed at determining the number of alpha streptococci in the air in several types of locations in New York City. A total of 2,517 samples of air were examined by means of the Wells air centrifuge, sheep's blood agar cultures being used for determining the presence of alpha hemolytic streptococci. Forty-six per cent of the samples were from six schools, 20 per cent from the cars of a subway and 34 per cent from six theaters, six streets and a park. More streptococci were found in schools than in any of the other locations, as was evidenced both by the total number per cubic foot and by the percentage in positive samples. The subway, however, was a close second.

The streptococci found were studied from the point of view of their fermentation reactions, final p_H in dextrose broth, effect on litmus milk, and macroscopic and microscopic structure and effect on blood. The results indicated that although most properties of definite air streptococci agree well with those of common throat strains, several properties of the putative strains are at variance. The analysis of these similarities and divergences makes it seem justifiable, the authors believe, to assume that the aberrant forms are closely related to the streptococci of the throat and possibly derived from them. They concluded that streptococci of the alpha hemolytic type are widely distributed in the air, both in enclosed places of congregation and in the open spaces of a large city. A majority of the streptococci seem to be of nasopharyngeal origin. Many of them differ, however, in structure and in certain biochemical properties from typical alpha streptococci of the throat. It is suggested that these differences are due to the effects of aerial environment. There appears to be, finally, some association between the differences in streptococcus content of the air of enclosed places and the facilities for ventilation, though this point is somewhat difficult to correlate.

Such studies as these serve to corroborate the already well established fact that pollution of the air of our large cities is economically wasteful and hygienically undesirable. The factual information collected by these and similar investigations should not be allowed to go to waste by failure of municipal authorities to act. While further information on the exact effects of atmospheric pollution in the large cities on the health of the population is desirable and necessary, active attempts to improve the air both inside and outside buildings should not be delayed for further positive proof of injurious effects.

1. Barrett, Hugh M.: *Atmospheric Pollution in Toronto, Canada*, *Canad. Pub. Health J.* 29: 1 (Jan.) 1938.

2. Buchbinder, Leon; Solowey, Mathilde, and Solotorovsky, Morris: *Alpha Hemolytic Streptococci of Air*, *Am. J. Pub. Health.* 28: 61 (Jan.) 1938.

DISCLOSURE OF DRUG FORMULAS UNDER FEDERAL TRADE COMMISSION ACT

The Federal Trade Commission Act, as amended by the Wheeler-Lea Act of March 21, 1938,¹ forbids the dissemination of false advertisements to induce the sale of foods, drugs, diagnostic and therapeutic devices and cosmetics in interstate and foreign commerce and in commerce in the District of Columbia or in any territory. It provides, however, that—

No advertisement of a drug shall be deemed to be false if it is disseminated only to members of the medical profession, contains no false representation of a material fact, and includes, or is accompanied in each instance by truthful disclosure of, the formula showing quantitatively each ingredient of such drug.²

The only discoverable purpose of this provision of the act is to establish one rule of interpretation for the determination of the truth or falsity of advertisements of drugs when the advertisements are disseminated only to members of the medical profession and another rule for the interpretation of advertisements of drugs under all other circumstances, and of all foods, diagnostic and therapeutic devices and cosmetics. That this is the true purpose of the provision set forth seems clear from the rule laid down by the act for determining whether advertisements generally are or are not false. The act says:

In determining whether any advertisement is misleading, there shall be taken into account (among other things) not only representations made or suggested by statement, word, design, device, sound, or any combination thereof, but also the extent to which the advertisement fails to reveal facts material in the light of such representations or material with respect to consequences which may result from the use of the commodity to which the advertisement relates under the conditions prescribed in said advertisement, or under such conditions as are customary or usual.³

Apparently, the advertisements of drugs that are disseminated only among members of the medical profession are by the language of the act taken out of the general rule of interpretation of other advertisements. That rule makes the advertiser responsible not only for what he states in the advertisement but also for failure to reveal facts material in the light of his representations or material with respect to consequences which may result from the use of the commodity to which the advertisement relates under the conditions prescribed in the advertisement or under such conditions as are customary or usual. To bring an advertisement of a drug within the special rule of interpretation laid down for advertisements of drugs that are disseminated among the medical profession alone, it is necessary only that such material facts as the advertiser sees fit to state are not false and that the advertisement furnishes the physician with a truthful disclosure of the formula, showing quantitatively each ingredient of the drug. Nothing in the act, however, requires an advertiser of a drug

to protect himself by taking advantage of this special interpretation or to disclose his formulas. The omission of material facts by the advertiser of a drug to the medical profession, it will be noted, is not to be regarded as making the advertisement false within the meaning of the act, even though the facts omitted are material in the light of representations actually made or material with respect to the dangers inherent in the use of the drug advertised. Herein the rule of interpretation for the advertisement of drugs disseminated only to the medical profession differs from the rule of interpretation laid down for the advertisement of drugs under other circumstances and of all foods, devices and cosmetics.

The most that can be said for this provision of the act seems to be that if a published formula is to afford any protection whatever to the advertiser it must be truthful and must disclose the quantity of each ingredient of the drug advertised. Such disclosure does not seem to be limited to the disclosure of active or potent drugs, but excipients, solvents, flavors, colors and preservatives must be quantitatively disclosed along with the other ingredients. If there is to be any relaxation in this requirement it must come by administrative favor or judicial decision and not from the plain words of the act.

Current Comment

SELENIUM IN INDUSTRY

The primary purpose of a recent study of selenium reported by Dudley¹ is to point out those industries in which unrecognized hazards may exist as the result of the processing of selenium-bearing materials. He also describes the methods developed for the determination of selenium in the air as dust or vapor, and a satisfactory method of urine examination. That this study is by no means premature is evidenced by the increase in the domestic consumption of selenium from approximately 57,000 pounds in 1921 to 412,000 pounds in 1935. Selenium is now widely employed in industry and includes such processes as glass decolorization, plastics, rubber "accelerators," fire-proofing of electric cable, photoelectric apparatus, glass, paint and ink pigments and chemicals. The excretion of selenium in the urine is considered conclusive evidence that workers are absorbing selenium, but more clinical and experimental laboratory work is necessary to establish a differential diagnosis based on the quantity of selenium excreted. Dudley discusses a modification of the previously reported technic of urine examination for selenium so that amounts as low as 0.01 mg. can be determined. Only by an environmental survey, he states, with sampling of workroom atmosphere for selenium contamination, can there be any authentic evaluation of the occupational hazards inherent in any of the industries or processes. Such methods of

1. Public No. 447, Seventy-Fifth Congress.

2. Public No. 447, Seventy-Fifth Congress, section 4.

3. Public No. 447, Seventy-Fifth Congress, section 4.

1. Dudley, H. C.: Selenium as a Potential Industrial Hazard, Pub. Health Rep. 53: 281 (Feb. 25) 1938.

analysis have been developed so that minute amounts of selenium may be determined in nearly any form or combination. The method consists of a sampling arrangement for absorbing gases or vapors with the ultimate recovery of selenium from a soda lime tube by distillation with hydrobromic acid. The selenium is precipitated and weighed or estimated colorimetrically. The extent of hazard in industries utilizing selenium is related primarily to the type of process. Fumes, vapors or liquids may result in definite dangers by the absorption of organic selenium compounds. Although skin absorption has not been studied experimentally, it has been shown that burns from hot acids containing selenium as the bromide result in the appearance of selenium in the urine within two days. An important corollary is that the normal human urine contains no distinguishable quantities of selenium. These considerations, Dudley believes, clearly show that selenium presents a potential industrial hazard and that adoption of control measures would be advisable in order to protect workers from injury resulting from absorption of seleniferous compounds.

THE SELECTION OF INTERNS FOR MUNICIPAL HOSPITALS

When it was proposed recently that interns for the New York City hospitals be selected by the Municipal Civil Service Commission and that the internship as a classified civil service position should carry with it a salary of approximately \$100 per month, the suggestions failed to receive the endorsement of Dr. S. S. Goldwater, Commissioner of Hospitals. The proposals were, moreover, vigorously opposed by the medical schools and private hospitals of the city. Now the New York Academy of Medicine makes available the report of a special subcommittee which has investigated this matter. The committee recommends that the rules governing the selection of interns should be uniform for all municipal hospitals except the university services; that all applicants for internships in the municipal hospitals be required to write a single examination, the identity of the candidates being unknown to the examiners who grade the papers; that medical school records and letters of recommendation be also considered, and finally that those candidates who have passed the preliminary written examination should be eligible for an oral and practical test which should be held at each hospital. The committee further recommends that the final selection of interns rest wholly in the hands of the medical boards of the several hospitals, 30 per cent being allowed for scholastic standing and character record, 30 per cent for the written examination and 40 per cent for the oral and practical examination. The situation in New York City is not unique, for similar proposals have been made in other large cities. The recommendations of the special committee of the New York Academy of Medicine offer a practical solution which deserves the consideration of the medical profession in all communities where similar problems arise.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

State Medical Election.—Dr. Seale Harris Sr., Birmingham, was elected president of the Medical Association of the State of Alabama at its annual meeting in Mobile April 21, succeeding Dr. Edward S. Sledge, Mobile. Dr. Roscoe C. Stewart, Sylacauga, was chosen vice president for the North-eastern division and Dr. Douglas L. Cannon, Montgomery, was reelected secretary. Montgomery was designated as the place for the next meeting, April 18-20, 1939.

ARKANSAS

Course in Pediatrics.—Lectures and clinics constitute a graduate course in pediatrics now being given throughout the state under the auspices of the Children's Bureau, U. S. Department of Labor, the Arkansas Medical Society and the Arkansas State Board of Health. Dr. Jean Valjean Cooke, associate professor of pediatrics, Washington University School of Medicine, St. Louis, the lecturer, opened the weekly sessions in Texarkana May 16, Camden May 16, Pine Bluff May 17, Forrest City May 18, Conway May 19 and Fort Smith May 20. Six meetings will be held in each series.

CALIFORNIA

Society News.—The Alameda County Medical Association, Oakland, was addressed April 18 by Drs. Leonard B. Barnard on "Newer Concepts in the Treatment of Osteomyelitis"; Oscar O. T. McAllister, "Manchester Operation for Uterine Prolapse"; Paul C. Samson, "Muscle Graft in Coronary Sclerosis," and Harry N. Akesson, "Gastroscopy as a Diagnostic Procedure."

Graduate Conferences.—A series of graduate conferences were recently held in Southern California under the auspices of the California Medical Association. One day sessions were held for the Riverside, Orange, Imperial and San Bernardino county medical societies, while a two day program was offered before the Santa Barbara County Medical Society. At the meeting of the San Bernardino society April 7 the following spoke:

Dr. Robert W. Langley, Los Angeles, The Decompensated Heart.
Dr. Robert W. Wilcox, Long Beach, Traumatic Surgery.
Dr. Frank W. Otto, Los Angeles, Colitis.
Dr. Orville N. Meland, Los Angeles, Malignancy.

GEORGIA

University Clinic Week.—Emory University School of Medicine will open a four day clinical session at Grady Hospital, Atlanta, May 31-June 3. Emory Alumni Day will be observed June 4. In addition to the clinics, the following will speak, among others:

Dr. Joseph H. Boland, Management of Compound Fractures.
Dr. Russell H. Oppenheimer, Home and Office Treatment of Heart Failure.
Dr. Emmett D. Colvin, Chronic Nephritis as a Complication of Pregnancy.
Dr. Max Cutler, Chicago, Recent Trends in the Radiation Treatment of Cancer.
Dr. William Carter Smith, Intravenous Use of Aminophylline in the Treatment of Certain Types of Heart Diseases and Bronchial Asthma.
Dr. William A. Selman will be toastmaster at the annual banquet and Dr. Oscar L. Miller, Charlotte, N. C., the speaker.

ILLINOIS

Personal.—Dr. Brockway D. Roberts, Wayland, Iowa, has been appointed professor of hygiene and director of student health at Knox College, Galesburg. Dr. Roberts graduated at the University of Illinois College of Medicine, Chicago, in 1935.

State Medical Election.—Dr. James H. Hutton, Chicago, was chosen president-elect of the Illinois State Medical Society at its annual meeting in Springfield May 19 and Dr. Samuel E. Munson, Springfield, was inducted into the presidency. Drs. Harry Otten, Springfield, and Clarence A. Earle, Des Plaines, were elected vice presidents and Drs. A. J. Markley, Garden Prairie, and Harold M. Camp, Monmouth, were reelected treasurer and secretary respectively.

Society News.—The Stephenson County Medical Society was addressed April 21 by Dr. John W. Ferrin, Chicago, on surgery of the prostate.—The Rock Island County Medical Society was addressed in Moline April 12 by Drs. Channing W. Barrett, Chicago, on "Preservation and Restoration of the Pelvic Floor" and Dr. George D. Hauberg, Moline, "Management of the Diabetic Patient."—The St. Clair County Medical Society was addressed in East St. Louis May 5 by Dr. William J. Dieckmann, Chicago, on "Abnormal Labor."—At a meeting of the Madison County Medical Society May 6 in Madison, Dr. Robinson Bosworth, East St. Louis, discussed "The Findings of Minimal Tuberculosis."—Dr. William R. Cubbins, Chicago, discussed "Fractures of the Hip" before the Sangamon County Medical Society in Springfield May 5.

Chicago

Appointments at University of Chicago.—Wilton M. Krogman, Ph.D., associate professor of physical anthropology and anatomy, Western Reserve University School of Medicine, Cleveland, has accepted a similar appointment at the University of Chicago, effective in September. According to the announcement Dr. Krogman will have the opportunity of developing a laboratory of physical anthropology at the university. A native of Oak Park, Ill., Dr. Krogman is secretary for the United States of the International Congress of Anthropology and Ethnology. He was field director of the archeological survey of Illinois for the University of Chicago during the summers of 1927 to 1930.—James Franck, Ph.D., since 1935 professor of physics at Johns Hopkins University, Baltimore, has been appointed professor of physical chemistry at the university, effective October 1. According to the *New York Times*, the appointment was made to focus fundamental studies of physical and chemical aspects of life processes basic to the study of disease, which the university has been conducting for some years. The primary objective of this cooperative research is to determine the normal processes of cell growth. Born in Hamburg fifty-five years ago, Dr. Franck received his degree of doctor of philosophy at the University of Berlin. He was awarded the Nobel prize in physics in 1925.

KANSAS

"Cancer Specialist" Enjoined from Practicing Medicine.—The Supreme Court of Kansas, May 7, found for the plaintiff in upholding the decision of the Wilson County trial court in the case of *State v. W. W. Cooper*, it is reported. This was an action in quo warranto brought to prevent Cooper, an unlicensed "cancer specialist" of Altoona, from practicing medicine and surgery in the state. In 1937, under an injunction law, passed through the efforts of the Kansas Medical Society, Cooper had been enjoined from practicing the healing art. He was said to be treating cancer, using a zinc chloride paste. A verdict in favor of the state was appealed by Cooper direct to the supreme court and the recent decision is the first of that court on the injunction law.

KENTUCKY

Health Units Consolidated.—The health units of Lexington and Fayette County have been consolidated into a single department under the direction of Dr. Charles D. Cawood, the present health officer of the county. Dr. Charles M. Moore recently resigned as city health officer.

Celebrations of Years of Practice.—Dr. James O. Carson, Bowling Green, entertained the Warren County Medical Society at a dinner recently, celebrating his completion of sixty years of medical practice. Dr. Carson is 82 years old.—Dr. John E. Wilson, Falmouth, celebrated the completion of fifty years of practice with a dinner, March 8, attended by physicians with whom he has been associated and other friends. Dr. Wilson was mayor of Falmouth for many years.

Society News.—Physicians of Woodford County recently met in Versailles and revived the Woodford County Medical Society, which had been inactive for several years. Dr. Charles F. Voigt, Midway, was elected president, and Dr. George H. Gregory, Versailles, secretary.—Louis A. Julianelle, Ph.D., St. Louis, addressed the Madison County Medical Society, Richmond, March 17, on "The Clinical and General Aspects of Inclusion Blepharitis."—Drs. Franklin Jelsma and Rettig A. Griswold, Louisville, addressed the Tri-County Medical Association in Lebanon March 31 on "Head Injuries" and "Treatment of Nonunited Fractures" respectively.—Dr. Thomas A. Griffith, Mount Vernon, addressed the Rockcastle County Medical Society, Mount Vernon, April 1 on pulmonary tuberculosis.—Dr. Emil Novak, Baltimore, addressed the Jefferson County Medical Society, Louisville, April 4, on

"Modern Conception of Organotherapy."—Dr. Baldwin H. E. W. Lucke, Philadelphia, addressed the Society of Physicians and Surgeons, Louisville, April 21, on "The Modern Concept of Bright's Disease."

MARYLAND

Conference on Mental Health.—At a conference on mental health at the Medical and Chirurgical Faculty Building, Baltimore, April 7-8, under the auspices of the Mental Hygiene Society of Maryland, the speakers included:

- Dr. Frederick H. Allen, director of the Child Guidance Clinic of Philadelphia, What Can I Do to Promote Better Mental Health of My Children?
- Burton Fowler, headmaster of Tower Hill School, Wilmington, Del., Means of Attaining Better Health for Students.
- Harrison S. Elliott, B. D., professor of practical theology, Union Theological Seminary, New York, What Can I Do to Promote the Better Mental Health of My Parishioners?
- Elton Mayo, M.A., professor of industrial research, Graduate School of Business Administration, Harvard University, Cambridge, Mass., How Can Employers Promote Better Mental Health for Their Employees?
- Miss Grace Marcus, case work consultant of the Charity Organization Society of New York City, Promotion of Better Health for Social Workers' Clients.

MASSACHUSETTS

Personal.—Russell L. Carpenter, Ph.D., assistant professor of anatomy, Columbia University College of Physicians and Surgeons, New York, has been appointed professor of zoology at Tufts College, Boston, succeeding Herbert V. Neal, Ph.D.—Dr. Raymond D. Tompkins, clinical director at the Veterans Administration Facility, Rutland Heights, has been appointed to a similar position at the facility in Mountain Home, Tenn.

Society News.—Dr. William B. Snow, New York, discussed induced fever as a therapeutic agent before the New England Society of Physical Medicine in Arlington Heights April 20.—The Worcester District Medical Society was addressed April 13 by Drs. David G. Ljungberg and Joel M. Melick, among others, on "Duodenal Diverticulum" and "Successful Termination of Pregnancy Following Double Sympathectomy" respectively.—W. Frank Walker, Dr. P.H., director of health studies, The Commonwealth Fund, New York, discussed "Changing Standards in Rural Health Work" before the Massachusetts Institute of Technology, Boston, April 15. This was the tenth Delta Omega Lecture.

MICHIGAN

Alumni Reunion.—The forty-ninth annual reunion and the Detroit Clinics of the Alumni Association of Wayne University College of Medicine will be held June 15-16. A program combining preclinical and clinical material has been arranged to cover the needs of the general practitioner and the specialist. Thursday will be given over to the commencement program of the school of medicine, a boat ride and the reunions of classes.

Personal.—Joel B. Peterson, Ph.D., formerly on the staff of the Chemical Laboratory of the American Medical Association, Chicago, was recently appointed director of chemical research with Frederic Stearns & Company, Detroit.—George P. Bugbee, assistant director, University of Michigan Hospitals, Ann Arbor, has been appointed administrator of the Cleveland City Hospital, effective June 15. He succeeds James A. Hamilton, who will become superintendent of the New Haven Hospital, New Haven, Conn.

Neuroanatomic Conference.—The laboratory of comparative neurology, University of Michigan Medical School, Ann Arbor, sponsored a neuroanatomic conference April 18. Visiting speakers on the program were Charles Judson Herrick, Sc.D., emeritus professor of neurology, University of Chicago, who spoke on "The Cortex in Relation to Learning"; Drs. Stephen W. Ranson, director, Institute of Neurology, Northwestern University Medical School, "Somnolence Caused by Hypothalamic Lesions in the Monkey," and Dr. Elisha S. Gurdjian, Detroit, "Certain Aspects of Spinal Fluid Pressure Changes."

Society News.—Dr. Albert C. Furstenberg, Ann Arbor, discussed "Clinical Significance of Acute Infections of the Mouth and Throat" before the Ingham County Medical Society in Lansing March 15.—Dr. Hugo A. Freund, Detroit, discussed "Diseases of the Peripheral Blood Vessels" before the Muskegon County Medical Society in Muskegon April 22.—Dr. Raymond B. Allen, dean, Wayne University College of Medicine, Detroit, was the toastmaster at the annual banquet of the Phi Beta Pi Medical Fraternity at the Fort Shelby Hotel, Detroit, April 30. Dr. Clarence E. Umphrey presented a paper entitled "Medicine Branches Out."—Dr. Robert C. Moehlig, Detroit, addressed the Jackson County Medical

Society, Jackson, March 15, on endocrine disturbances in general practice.—At a meeting of the Eaton County Medical Society in Charlotte, March 17, Dr. Willard Van Hazel, Chicago, spoke on "Empyema and Surgical Conditions of the Chest."—Dr. Charles Leslie Mitchell, Detroit, discussed "Low Back Pain" before the Calhoun County Medical Society, Battle Creek, May 3.

MISSOURI

Annual Clinical Conference.—The annual graduate course and clinical conference of the St. Louis Clinics was held May 23-28. Medical, dental and surgical subjects were considered. The material was not arranged into courses but the subject matter was selected with special reference to the requirements of the general practitioner. Members of the medical department officers of the U. S. Army and Navy cooperated in the conference, which was presented solely by St. Louis physicians.

Dr. Casey Goes to Louisiana.—Dr. Albert Casey, associate of pathology and chairman of the department, St. Louis University School of Medicine, St. Louis, has been appointed assistant professor in the department of pathology and bacteriology at Louisiana State University School of Medicine, New Orleans. Dr. Casey has served on the staff of the Rockefeller Institute for Medical Research and as associate professor of pathology at the University of Virginia Department of Medicine. Since 1936 he has been on the staff of St. Louis University, from which he graduated in 1927.

NEBRASKA

State Medical Election.—Dr. Arthur L. Miller, Kimball, was named president-elect of the Nebraska State Medical Association at its annual meeting in Lincoln April 28, and Dr. Homer Davis, Genoa, was installed as president. The next annual session will be held in Grand Island.

Society News.—A symposium on arthritis was presented at a meeting of the Lancaster County Medical Society, Lincoln, April 5 by Drs. Miles J. Breuer and Frederick F. Teal Jr.—Drs. R. L. Traynor and William H. Schmitz, Omaha, addressed the Madison Six County Medical Society in Norfolk April 19 on diseases of the pericardium, and prostatism.

Fifty Years of Practice.—The Richardson County Medical Society recently gave a dinner in honor of the sixtieth wedding anniversary of Dr. and Mrs. John A. Waggener, Humboldt. Dr. Waggener has practiced medicine for sixty-two years.—Drs. C. A. Bradley and Clifford P. Fall, Beatrice, recently received medals from the Gage County Medical Society in honor of their long years of practice. Dr. Bradley has practiced fifty-two years and Dr. Fall fifty years.

NEW YORK

Syracuse Alumni Reunion.—Alumni of the Syracuse University School of Medicine will hold their annual reunion June 6-7 at the school. The following program is announced for the scientific sessions:

- Dr. Russell L. Cecil, New York, Treatment of Pneumonia.
- Dr. Frank L. Jennings, Oak Terrace, Minn., Pneumothorax in the Treatment of Pulmonary Tuberculosis.
- Dr. John H. Stokes, Philadelphia, Treatment of Syphilis.
- Dr. Harold E. B. Fardee, New York, Treatment of Heart Disease During Pregnancy and Labor.
- Dr. John J. Corbett, Detroit, Rectal Fistula.
- Dr. Charles D. Squires, Binghamton, Diagnosis and Treatment of Acute Surgical Emergencies.

There will be an exhibit of physicians' hobbies and a dinner at the Hotel Onondaga.

New York City

Diabetes Association Incorporated.—Announcement was made May 1 of the incorporation of the New York Diabetes Association. Formerly an affiliate of the New York Tuberculosis and Health Association, the new corporation has separate offices at 22 East Fortieth Street. This action is said to mark the opening of a renewed campaign to aid 75,000 diabetic patients in the city; 2,500 persons died from diabetes in the city last year.

Report of the Hospital Commissioner.—Dr. Sigismund S. Goldwater, commissioner of hospitals, transmitted to the mayor April 28 the annual report on thirty institutions under his jurisdiction. In 1937 the city cared for 266,682 patients in the city hospitals and paid for the care of an additional 103,000 in private hospitals and homes for the aged and infirm. The hospitals are staffed by 4,406 visiting physicians who gave their time and by 1,669 paid physicians, half of whom were

interns in training. In addition there were 7,844 nurses and attendants. There were more than 43,000 major operations performed, and 16,306 babies were born in the hospitals. Total expenditures of the department were \$24,331,374. The average daily per capita cost for hospitalized patients was \$3.58, for outpatients 37 cents. Both are larger than the figures for the previous year because of improved service, the eight hour day and increased cost of commodities, the report said. Sums collected from city patients amounted to \$844,247, contributions to \$623,877.

Society News.—Speakers at the stated meeting of the New York Academy of Medicine recently were Drs. Edwards A. Park, Baltimore, on "Recognition of Deficiencies in the First Four Vitamins and Measures for Prevention"; John G. Fitzgerald, Toronto, "Specific Prevention of Diphtheria—Further Observations and Inquiries," and James P. Leake, U. S. Public Health Service, Washington, D. C., "Variations in Incidence in Infectious Diseases." At this meeting the academy's gold medal was presented to Dr. Bela Schick (THE JOURNAL, March 19, p. 906).—Drs. Bernard Seligman and George B. Dorff addressed the New York Endocrinological Society March 23 on "Hirsutism: Etiology and Treatment" and "Observations on Treatment of Intra-Abdominal Cryptorchidism with Anterior Pituitary-like Hormones" respectively.—Drs. Henry H. Kessler, Newark, N. J., and Joseph J. Eller, among others, addressed the Society of Plastic and Reconstructive Surgery March 24 on "Cineplastic Surgery and Prosthesis" and "Cosmetic Results in the Treatment of Skin Tumors" respectively.—The class of 1898 of Bellevue Hospital Medical College held its fortieth anniversary dinner at the Hotel Croydon May 26.

OHIO

Dr. Pickering Lectures.—Dr. George W. Pickering, assistant in the department of clinical research and lecturer in cardiovascular pathology, University College Hospital, London, England, gave the Frank E. Bunts Lecture at the Cleveland Clinic May 5 on "The Problem of Human Hypertension." Dr. Pickering also delivered the forty-third Hanna lecture at Western Reserve University School of Medicine May 6 on "Experimental Studies on Headache."

PENNSYLVANIA

District and County Society Meeting.—The annual meeting of the Tenth Councilor District Medical Society (Allegheny, Beaver, Lawrence, Westmoreland counties), May 12, was in conjunction with the annual graduate program of the Beaver County Medical Society in Beaver Falls. The survey of the American Medical Association on local medical service needs was the theme of the district society. The scientific program included the following speakers:

- Dr. George J. Kastlin, Pittsburgh, Hodgkin's Disease.
- Dr. William H. Guy, Pittsburgh, Management of Malignant Glands of the Neck.
- Dr. Russell B. Bailey, Wheeling, W. Va., Collapse Therapy.
- Dr. Arthur J. Skeel, Cleveland, Uterine Hemorrhage.
- Dr. Walter C. Alvarez, Rochester, Minn., Hints in Gastrointestinal Disorders.
- Dr. William Wayne Babcock, Philadelphia, Practical Points in General and Minor Surgery.

Dr. Thomas Parran, Washington, D. C., surgeon general, U. S. Public Health Service, addressed the afternoon public meeting on "Syphilis Can Be Stamped Out." He, with Dr. Alvarez, and Drs. Frederick J. Bishop, Scranton, and David W. Thomas, Lock Haven, president and president-elect, respectively, state medical society, addressed the banquet in the evening.

Philadelphia

Medical College News.—Dr. Anton J. Carlson, Chicago, delivered the annual Alpha Omega Alpha Lecture of the Woman's Medical College of Pennsylvania March 29 on "Government Medicine and Public Health." Dr. Arvid Lindau, professor of general pathology and bacteriology at the University of Lund, Sweden, lectured at the college March 28 on "Pathogenesis of Peptic Ulcer."

Society News.—The Philadelphia County Medical Society held a special meeting May 3 in observance of National Child Health Week, with a symposium on "The Family Doctor and the Child." The speakers were Drs. William C. Hunsicker, director of public health; Ralph M. Tyson, John F. Sinclair, John P. Scott and James J. Waygood.—At a meeting of the Medical League April 25 the speakers were Drs. Ernest A. Spiegel on "The Mechanism of Pain"; John F. Huber, "Anatomical Factors in Palpation of the Dorsalis Pedis Artery" and Hugh Montgomery, "Peripheral Vascular Dis-

case."—The annual meeting of the Philadelphia Heart Association was held April 27 with Dr. Robert L. Levy, New York, as the guest speaker on "The Diagnosis of Cardiac Diseases"; Dr. David Riesman reviewed the society's activities during the year.—Dr. Russell M. Wilder, Rochester, Minn., delivered the forty-first Mary Scott Newbold Lecture of the College of Physicians of Philadelphia May 5 on "Recent Clinical and Experimental Observations in Adrenal Insufficiency."

Pittsburgh

Dr. Whipple Gives Mellon Lecture.—Dr. George H. Whipple, dean and professor of pathology of the University of Rochester School of Medicine, Rochester, N. Y., delivered the twenty-first Mellon Lecture of the Society for Biological Research at University of Pittsburgh School of Medicine, May 18. He discussed "Protein Production and Exchange in the Body, Including Hemoglobin, Plasma Protein and Cell Protein."

TENNESSEE

Graduate Course and Military Symposium.—A two day graduate clinical conference offered in conjunction with a medical military symposium will be conducted at Vanderbilt University School of Medicine, Nashville, June 6-7. Reserve officers will receive "inactive duty" credit for attendance. Dr. and Mrs. G. Canby Robinson, Baltimore, will be guests of honor at a dinner concluding the sessions. Dr. Robinson was formerly dean of Vanderbilt.

VERMONT

Personal.—Dr. Charles S. Woodall, formerly assistant superintendent of the Walter E. Fernald State School, Waverley, Mass., has been appointed superintendent of the Brandon State School for the feeble-minded at Brandon.

Millions Willed to Bennington Hospital.—The Henry W. Putnam Memorial Hospital, Bennington, is to receive \$3,000,000 by the will of late Henry W. Putnam, New York wire and glass manufacturer, who died March 30. The hospital was founded by Mr. Putnam's father in 1912.

WISCONSIN

Executive Secretary Appointed.—Mr. James O. Kelly, Milwaukee, has been appointed executive secretary of the Medical Society of Milwaukee County, succeeding Mr. Theodore Wiprud, who has accepted a similar position with the Medical Society of the District of Columbia, Washington. During the last several years, Mr. Kelly has assisted the State Medical Society of Wisconsin on such projects as graduate clinics on infant and maternal welfare, district meetings and the annual meetings of the society. In 1936 he was appointed by the governor to conduct a survey of hospitals and physicians in Wisconsin to secure accurate information on the problems of hospitals and physicians in connection with automobile accidents. He is the son of Dr. and Mrs. Francis H. Kelly of Merrill.

Graduate Medical Education Programs.—Two types of graduate education programs are being offered throughout the state during May and June under the auspices of the council on scientific work and the committee on maternal and child welfare of the state medical society and the bureau of maternal and child health of the state board of health. A one day program, consisting of an afternoon and evening meeting, is scheduled for Stevens Point, Wausau, Marinette, Sheboygan, West Bend, Manitowoc, Wisconsin Dells, Fond du Lac, Waukesha and Racine. Dr. Paul Padget, Baltimore, will discuss syphilis, and another speaker, whose name is not given, will talk on obstetrics. In the afternoon Dr. Padget will be available to the county medical societies in the areas served for clinics. The bureau of maternal and child health will present courses on obstetrics and pediatrics in Baraboo Mondays, Richland Center Tuesdays, Viroqua Wednesdays, Lancaster Thursdays and Monroe Fridays. Lectures will be delivered one afternoon and evening each week for five weeks. The first two meetings will be devoted to prevention and treatment of toxemias of pregnancy, and infections and hemorrhages of pregnancy. The third session will deal with prematurity from both the obstetric and the pediatric aspect, while the fourth and fifth sessions will be devoted to pediatrics and will encompass the following topics: meningitis, acute and chronic abdominal conditions, the complications of respiratory infections, internal secretions in childhood, drugs commonly used in pediatric practice and pyuria.

GENERAL

Alumni Meeting.—The alumni of the University of Louisville will hold a banquet at the Clift Hotel, San Francisco, Wednesday evening June 15. Dr. R. C. Arnold, U. S. Marine Hospital, San Francisco, is in charge of reservations.

Courses for Teachers of Sight-Saving Classes.—The National Society for the Prevention of Blindness announces that courses for the training of teachers and supervisors of sight-saving classes will be offered at the summer sessions of the following institutions:

Tulane University, New Orleans, June 13 to July 23.
University of Cincinnati, June 20 to July 26.
University of Hawaii, Honolulu, June 27 to August 5.
Seattle, June 20 to July 20.
June 27 to August 5.
Buffalo, July 5 to August 12.
University, New York, July 6 to August 13.

Association for Research in Ophthalmology.—The annual meeting of the Association for Research in Ophthalmology will be held in San Francisco Tuesday June 14 at the Mark Hopkins Hotel. Among the speakers will be:

Drs. James H. Allen and Alson E. Braley, Iowa City, Experimental Studies of the Pathogenicity of Staphylococcus Toxin.
Dr. Hermann M. Burian, Hanover, N. H., Influence of the Central Nervous System on the Pigment Migration in the Retina of the Frog.
Drs. Conrad Berens, Daniel Murray Angevine, Loren P. Guy and Sidney Rothbard, New York, Eye Lesions in Experimental Lesions, with Special Reference to Arthritis.
Drs. William E. Borley and Maurice L. Tainter, San Francisco, Influence of Dinitrophenol on the Production of Experimental Cataracts by Lactose.

American Proctologic Society.—The thirty-ninth annual meeting of the American Proctologic Society will be held at the St. Francis Hotel, San Francisco, June 11-13, under the presidency of Dr. Harry Z. Hirshman, Philadelphia. Among the speakers will be:

Dr. Montague S. Woolf, San Francisco, Curability of Chronic Ulcerative Colitis.
Dr. Marion C. Pruitt, Atlanta, Ga., Questionable Proctologic Problems.
Dr. Newton D. Smith, Rochester, Minn., Perianal Pyoderma.
Dr. Martin S. Kleckner, Allentown, Pa., Importance of Low Spinal Anesthesia in Proctologic Operations.

A group of papers on prolapse will be presented by Drs. Rufus C. Alley, Lexington, Ky., Mark L. Emerson, Oakland, and Alfred John Murieta, Los Angeles, Calif.

Meeting of Ophthalmologists.—The seventy-fourth annual meeting of the American Ophthalmological Society will be held at the Mark Hopkins Hotel, San Francisco, June 9-11. The following, among others, will present papers:

Dr. William H. Crisp, Denver, Shall We Use Cycloplegics?
Dr. Edward Jackson, Denver, Subjective Study of Visual Aberrations.
Dr. Charles W. Tooker, St. Louis, Metastatic Septic Endophthalmitis with Ring Abscess of the Cornea—Case Report and Pathological Anatomy.
Dr. Edwin M. Neher, Salt Lake City, A New Method for Transplanting Pterygium.
Dr. Arthur J. Bedell, Albany, N. Y., Traumatic Retinal Angiopathy.
Dr. Frederick T. Tooke, Montreal, Canada, A Case of Aleukemic Lymphosis Involving the Upper Lids, with Pathological Findings.
Dr. Trygve Gundersen, Boston, Results of Autotransplantation of Cornea Into the Anterior Chamber: Their Significance Regarding Corneal Nutrition.

Association for Study of Allergy.—The sixteenth annual meeting of the Association for the Study of Allergy will be held at the Hotel Empire, San Francisco, June 10-11. Among the speakers will be:

Dr. Orville H. Brown, Phoenix, Ariz., Practical Bacterial Vaccines for Each Case.
Drs. Robert W. Lamson, Los Angeles, and Harry L. Huber, Chicago, Long Continued Hypodermic Use of Large Amounts of Epinephrine.
Dr. Norman W. Clein, Seattle, Allergy in Infants: The First Allergic Manifestations.
Dr. Orval R. Withers, Kansas City, Mo., Food Allergens: Atopic Reagents and the Botanical Classification of Foods.
Dr. Morris Murray Peshkin, New York, Sensitization to Tobacco in Allergic and Nonallergic Children with Passive Transfer Studies.

There will be a round table luncheon Saturday and the annual dinner will be held Saturday evening.

Meeting of Clinical Pathologists.—The seventeenth annual meeting and fifth seminar of the American Society of Clinical Pathologists will be held at the Palace Hotel, San Francisco, June 9-11. The following will speak among others:

Drs. Alfred S. Giordano, Agatha M. Wilhelm and Mildred C. Prestud, South Bend, Ind., The Serum Phosphatase in the Differential Diagnosis of Obstructive Jaundice.
Dr. Benjamin S. Kline and Mrs. D. Lloyd, Cleveland, Rapid Preparation of Serum for the Slide Tests for Syphilis.
Dr. Thomas Addis and Eloise Jameson, Ph.D., San Francisco, The Significance of Albumin-Globulin Ratios.

Dr. William Dock, professor of pathology, Stanford University School of Medicine, San Francisco, will address the annual banquet Saturday evening on "Ebb and Flow of Theories

About Pernicious Anemia." Dr. Carl W. Maynard, Pueblo, will deliver the presidential address on "Clinical Pathology Today."

American Heart Association.—The fourteenth scientific sessions of the American Heart Association will be held at the Sir Francis Drake Hotel, San Francisco, June 10-11. Dr. William J. Kerr, San Francisco, will deliver the presidential address on "Relief of Pain in Angina Pectoris Through Improved Filling of the Heart." Dr. Carl J. Wiggers, Cleveland, will give the annual address on "The Dynamics of Hypertension" and Dr. Eliot R. Clark, Philadelphia, the George Brown Memorial Lecture on "Certain Aspects of the Behavior of Peripheral Blood Vessels as Observed Microscopically in the Living Mammal." Other speakers will include:

- Dr. Wilhelm Dressler, Vienna, Austria, Dehydration Through Glycosuria, Experiments with Phlorizin as a Diuretic.
- Dr. Eric Ogden and Nathan W. Shock, Ph.D., Berkeley, Studies on Blood Pressure.
- Dr. Irvine H. Page, Oscar M. Helmer, Ph.D., and Dr. Kenneth G. Kohlstaedt, Indianapolis, The Isolation of Nicotine from Human Urine.

Examination in Pediatrics.—The American Board of Pediatrics announces the following dates for future examinations: Detroit, October 26 (Wednesday), preceding the meeting of Region III of the American Academy of Pediatrics; Rochester, N. Y., November 13 (Sunday), following the meeting of Region I of the American academy; Oklahoma City, November 15 (Tuesday), preceding the joint meeting of Region II of the academy with the Southern Medical Association. The board announces that all applications must be in the office of the secretary, Dr. Charles A. Aldrich, Winnetka, Ill., at least four months before an examination can be given. In view of the fact that the vast majority of those taking a second examination fail, the board ruled at its annual meeting in New York that applicants who have failed at one examination must wait two years before coming before the board for reexamination and must show evidence of further study or training in pediatrics to justify reexamination.

American Gynecological Society.—The sixty-third annual meeting of the American Gynecological Society will be held at the Grove Park Inn, Asheville, N. C., May 30-June 1, under the presidency of Dr. Noble Sproat Heaney, Chicago. The speakers will include:

- Dr. Albert H. Aldridge, New York, End Results of Treatment of 388 Cases of Placenta Praevia at the Woman's Hospital and Sloane Hospital for Women.
- Dr. George Van S. Smith, Brookline, Mass., Observations Concerning the Metabolism of Estrogens in Women.
- Dr. Karl M. Wilson, Rochester, N. Y., Results of the Treatment of Gonorrhea in Women by Sulfanilamide.
- Dr. Thaddeus L. Montgomery, Philadelphia, Problems in the Etiology and Prevention of Stillbirth.
- Dr. Virgil S. Counsellor, Rochester, Minn., Endometriosis: A Clinical and Surgical Review.
- Dr. George L. Streeter, Baltimore, Advances in Our Knowledge of the Early Primate Embryo.
- Dr. John Rock, Boston, Human Ovulation Electric Potentials.
- Dr. Carl R. Wegner, St. Louis, Pernicious Vomiting of Pregnancy.
- Dr. William C. Danforth, Evanston, Ill., The Place of Vaginal Hysterectomy in Present Day Gynecology.

Tours to San Francisco's Treasure Island.—Construction work on the Golden Gate International Exposition, which will open next year, has already reached the stage where it offers great interest to the public and each succeeding week will open new places of interest. The public and especially persons attending the annual session of the American Medical Association are invited to visit "Treasure Island." They may do so by taking the special Treasure Island ferries, which leave the Ferry Building every two hours from 7:30 a. m. to 3:30 p. m. week days and on Sunday every hour from 10 a. m. to 3 p. m. The round trip fare is 25 cents; there is also a 25 cent admission charge to Treasure Island. The tour about the island takes a little more than an hour. There are facilities on the island at present for dinner from \$1 and up, and for luncheons from 45 cents up. Treasure Island, in San Francisco Bay, is about a mile square. It is said to be the largest man made island. The architecture of the exposition buildings combines the elements of oriental and occidental design. When the fair is completed, one million flowers will be woven into a magnificent "magic carpet" on the west end of the island. Thirty-five foreign nations and three fourths of the states in the United States are planning to participate in this world's fair. Information can be obtained by addressing the Golden Gate International Exposition, 585 Bush Street, San Francisco.

National Tuberculosis Meeting.—The thirty-fourth annual meeting of the National Tuberculosis Association will be held in Los Angeles June 20-23 at the Biltmore Hotel. The preliminary program announced a symposium on tuberculosis in

industry, in which the speakers will be Drs. Anthony J. Lanza, New York; William A. Sawyer, Rochester, N. Y.; Clarence D. Selby, Detroit, and Mr. Donald E. Cummings, Denver. Another symposium will be on "Chronic Nontuberculous Infections of the Lung," with the following speakers: Drs. Robert G. Bloch, Chicago; Benjamin S. Kline, Cleveland; Jacob J. Singer, Los Angeles; Harold Brunn, San Francisco; Paul C. Samson, Oakland, and Ernest C. Dickson, San Francisco. Other speakers will include:

- Dr. Carleton B. Peirce, Ann Arbor, Mich., Roentgenologic Anatomy of the Chest.
- Dr. Charles Weiss, San Francisco, Cellular Proteinases in Inflammatory and Experimental Tuberculosis.
- Dr. Sherwood Moore, St. Louis, Body Section Radiography.
- Dr. Henry Stuart K. Willis, Northville, Mich., Treatment of Tuberculosis by Tuberculin Desensitization.
- Dr. Howard W. Bosworth, Los Angeles, Follow-Up of Collapse Therapy Cases.

Other symposiums will be presented on rehabilitation of the tuberculous—a community problem; transience and tuberculosis; poverty and tuberculosis with particular reference to the economic and social significance of high death rates in certain groups, and tuberculosis in the general practice of medicine with particular emphasis on case finding. The American Sanatorium Association and the National Conference of Tuberculosis Secretaries will hold their meetings June 20.

Registration Under Harrison Narcotic Act and the Marihuana Tax Act.—On or before July 1, every physician registered under the Harrison Narcotic Act or under the Marihuana Tax Act or under both must reregister with the collector of internal revenue of each district in which he maintains an office or a place for the treatment of patients. Failure to reregister within the time allowed by law adds a penalty of 25 per cent to the annual tax payable at the time of registration and in addition makes the physician in default liable to a fine not exceeding \$2,000, or to imprisonment for not exceeding five years, or to both. The Commissioner of Internal Revenue has been lenient in the past in enforcing the criminal penalties provided by the Harrison Narcotic Act for tardy registration but continued disregard on the part of some physicians of the requirement of that act with respect to reregistration, and failure to comply with the registration requirement of the recently enacted Marihuana Tax Act will inevitably lead to criminal prosecutions. In recent years the commissioner has given some negligent or recalcitrant physicians the choice between paying substantial sums by way of compromise in lieu of the penalties for their offenses or, as an alternative, accepting criminal prosecution with resultant publicity and liability to fines of indefinite amounts and possibly imprisonment. This was an act of grace on the part of the commissioner; he might have instituted criminal prosecutions without allowing the offending physicians any choice in the matter. If the course that the commissioner has adopted does not produce the desired promptness in registration, he will have no recourse other than criminal prosecution to attain that result.

Government Services

Vacancies for Senior Medical Interns

The U. S. Public Health Service announces a number of vacancies to occur about July 1 for second year medical interns. Any physician, not over 30 years of age, who has graduated from an accredited medical college and who has completed, or will shortly complete, one year's internship in an approved hospital is eligible to apply. No written examination is required. Only applicants who are interested in the service as a career should respond. Appointments are to be effective on or about July 1 to vacancies at marine hospitals and federal penal and correctional institutions. Candidates appointed for duty at marine hospitals will receive a gross pay of \$1,800 each a year, from which a deduction of \$690 annually will be made if quarters, subsistence and laundry are furnished. Candidates who are assigned to the federal penal and correctional institutions will receive \$1,620 a year, from which about \$240 annually will be deducted if similar accommodations are furnished. Quarters, subsistence and laundry will be furnished in kind in every instance in which such allowances are available. The quarters for an intern are designed for the use of the individual himself and cannot be shared by dependents. Additional information may be obtained by addressing the Surgeon General, U. S. Public Health Service, Washington, D. C.

Foreign Letters

LONDON

(From Our Regular Correspondent)

April 30, 1938.

The Control of Marriages

Some sensation has been caused by the forecast by Sir Farquhar Buzzard, regius professor of medicine in the University of Oxford, of state control of all marriages in the next twenty-five years as a necessary measure to preserve the quality of the race. He was speaking in a series of lectures organized by the British Medical Association as a contribution to the National Fitness Campaign. He said that the state interfered with the liberty of the criminal because he was harmful to the community. But the consequences of ill advised marriages were equally damaging and much further reaching. Under present conditions the subnormal had every encouragement to reproduce the subnormal, while the normal and the supernormal bore the burden and were tempted and even forced to limit reproduction. We were confronted not only with a declining birth rate but with a population in which the unfit would outnumber the fit.

He put forward four proposals to avert this danger: 1. An intensive study of human heredity in a limited area. 2. More general education of children in biology, with special reference to heredity. 3. Some form of statutory authority for marriage involving the investigation of the personal and family health of the parties. 4. Some form of economic encouragement toward raising a fit family.

The Causes of Exophthalmos

At the annual congress of the Ophthalmological Society a discussion on the differential diagnosis of the causes of exophthalmos was introduced by R. Foster Moore. He estimates proptosis by standing behind the patient and making him look a little upward and tilt the head backward until the summit of the cornea first appears in view in front of the eyebrow. Deep palpation of the orbital contents with the little finger enables the front edge of the orbital mass sometimes to be felt, revealing its consistency and position. Tenderness might suggest inflammatory origin. At times when the tumor could not be felt the orbital fat was pushed forward and could be made to slip between the skin and the orbital margin. On palpation proptosis might be found reducible if due, for instance, to cavernous nevus; or pulsation due to arteriovenous aneurysm might be detected. Limitation of movements is more likely to be general in inflammatory than in neoplastic conditions. The immobility in inflammation is probably due to a toxic effect on the muscles, but paralysis is sometimes due to involvement of a nerve, such as the sixth, in cavernous sinus thrombosis. The palsies in thyrotoxicosis seemed to be due to persistent changes in the muscles.

Inflammatory causes provided the largest group of cases in the absence of exophthalmic goiter. In this disease a retracted upper lid might give a false appearance of exophthalmos. Metastatic tumors in the orbit were rare but should be first excluded in all cases of unilateral proptosis in an adult. Hemorrhage into the orbital cavity was frequently due to trauma but might occur spontaneously in hemophilia and scurvy or from physical causes, as in whooping cough or during birth. Arteriovenous aneurysm was one of the rarer causes of proptosis.

Dr. W. Russell Brain discussed the neurologic and general medical causes. A general rise of intracranial pressure might cause slight exophthalmos, but a much greater degree was produced by the pressure of a tumor growing near the orbit. Meningioma and slowly growing extracerebral tumors were

the most important. In such cases ptosis due to involvement of the third nerve or of the ocular sympathetic was common and helped to distinguish the exophthalmos from that of endocrine origin, which usually produced lid retraction. Intracranial aneurysms which were not syphilitic but due to a congenital defect in the muscular coat of the vessel might cause exophthalmos. Impaired venous return from the head, due to aortic aneurysm, intrathoracic neoplasm and even severe chronic emphysema, may cause exophthalmos, which might be associated with cyanosis and tortuosity of retinal veins. The syndrome of exophthalmic ophthalmoplegia had thrown light on the exophthalmos associated with goiter. It affected middle aged persons and males much more than did exophthalmic goiter. Progressive exophthalmos of one or both eyes was associated with external ophthalmoplegia, unilateral or bilateral. There was much edema of the lids and conjunctivae, which might protrude beyond the anterior border of the cornea. Hyperthyroidism was rarely severe and the condition might be progressive in patients with a subnormal basal metabolic rate after thyroidectomy. Recent experimental work on the thyrotropic hormone of the pituitary suggested that the exophthalmos might be due to overproduction of that hormone.

Bill to Regulate the Sale of Contraceptives

In the House of Commons leave was granted to introduce a bill to regulate the public display in shops of contraceptives and descriptive matter and to prohibit street trading in such articles. The member who introduced the bill referred to the widespread sale of contraceptives, particularly in populous areas. An inquiry showed that of 280 pharmacists only seven did not stock them. In addition a large number of shops were devoted to their sale, so as to become an offense to many who passed by. The bill dealt with the undue display of contraceptives and descriptive matter and sought to impose an age limit on persons to whom they might be sent.

The Presidency of the Royal College of Physicians

The office of president of the Royal College of Physicians has been held by Lord Dawson for the unusually long period of seven years, during which time he directed the activities of what was formerly considered simply an academic body into such practical directions as the promotion of research and postgraduate education. He has been succeeded by Dr. Robert Hutchison, consulting physician to the London Hospital and the Hospital for Sick Children, who is a well known clinical teacher and an authority on dietetics and pediatrics. His successful textbooks include the "Index of Treatment" (of which he is editor), "Clinical Methods," "Food and Dietetics" (which has reached an eighth edition), "Lectures on Diseases of Children" (which has reached a seventh edition), and "Elements of Medical Treatment" (third edition). In an age of faddists, in which the craze for novelty leads to the acceptance of much which is unsound, the new president is distinguished for his sturdy common sense. He is a Scot from the University of Edinburgh.

The International Congress of Psychotherapy

The tenth International Congress of Psychotherapy will be held at Oxford July 29-August 2 under the presidency of Prof. C. C. Jung. The International Medical Society of Psychotherapy, under whose auspices the congress is being held, has been in existence for fifteen years. Previous to 1937, when the congress was held at Copenhagen, the meetings took place in various German towns. This is the first meeting in an English-speaking country. The main subjects to be discussed are the psychology of the phases of life, psychotherapy and psychosomatic problems. The long contributions (forty-five minutes) will be in the form of read papers, but it is hoped that the shorter ones will be in the form of lectures based on notes. There will be ample time for discussion. Synopses of

the papers will be provided in the three languages of the congress, English, French and German. A small exhibition is being arranged to cover those sides of psychotherapeutic work which can be more conveniently demonstrated in graphic form. Physicians who have material which they think will be of special interest should communicate with the honorary secretary, Dr. E. B. Strauss, 81 Harley Street, London, W. 1. The registration fee is 17 shillings (\$3.50), which should be sent to the business secretary, Mr. H. Gibbs-Smith, 106 Brompton Road, London, S.W. 3, preferably by May 15. Members, both men and women, will be accommodated in Balliol and Somerville colleges at a cost of \$15, including all meals.

A Fatal Mistake

A mistake which resulted in the death of a peeress, aged 65, Lady Rankeillour, should be a warning to physicians never to order a powerful drug over the telephone. Her nurse rang up her physician, saying she had given her extra sleeping tablets and that she did not seem able to sleep. The nurse mentioned paraldehyde. She had not given it to a patient for sixteen years and did not know the dose. At the inquest she stated that she asked how she should give it and the physician telephoned to give a rectal injection of 6 ounces of paraldehyde in 8 ounces of paraffin. She wrote the message on the telephone block. When she told the pharmacist that she had to give 6 ounces as an injection he thought it was rather a large dose and that the maximum dose was 2 ounces. The injection was given and when the nurse found next morning that she could not rouse the patient she sent for the physician. In his evidence he stated that the dose of paraldehyde was determined by the weight of the patient—a drachm to the stone. In this case the patient weighed 10 stones (63.5 Kg.) and he ordered the nurse to give 6 drachms (22.5 cc.). It was a perfectly proper drug for a nurse to administer and he had not met one who did not know about it. A pathologist gave evidence that death was due to respiratory failure and was consistent with paraldehyde poisoning. The coroner recorded a verdict of "death by misadventure."

PARIS

(From Our Regular Correspondent)

April 30, 1938.

Attempt to Limit Prescription of Pharmaceutical Specialties

To check the indiscriminate prescription of so-termed pharmaceutical specialties for those covered by the social insurance law, the minister of labor has been obliged to limit the sums to be reimbursed to the insured when such "specialties" are prescribed for them. There are more than 10,000 of these special preparations in France and the traditional art of prescription writing is almost a dead issue. It cannot be denied that it is far easier to prescribe one of these "specialties" than to write a prescription. The patient is obliged to pay about 20 per cent more for the majority of these special preparations than a druggist would ask for an ordinary prescription with the same ingredients. For other "specialties" the patient here must pay far more than for the same drugs in the form of a prescription. The social insurance patient in the future will be reimbursed to the extent of 40 per cent for about 3,500 of 6,000 "specialties" but only 10 per cent for the remainder. Many of the pharmaceutical houses advertise in nonmedical journals and sing the praises of their special preparation over the radio, so that the socially insured have formed the habit of asking the attending physician to prescribe these unethically advertised preparations.

The profession here is also having its attention directed to another unethical mode of advertising employed by certain "specialty" makers. Every candidate for the medical degree in France must submit a thesis based on laboratory or clinical

observations. The cost of printing the thesis is often quite a burden for impecunious students, so that it has become a habit for some "specialty" manufacturers to defray the cost of printing the thesis provided it is based on the use of their particular "specialty" and the records of its use made on the record sheets of well known clinics.

Proposal to Punish Fee Splitting and Advertising

A public hearing will take place shortly before one of the committees of the French senate on a bill introduced by a former minister of public health, Mr. Sellier. The object of the proposed law is to penalize not only physicians who divide the fees received from patients referred to them for an opinion or operation but to put a stop to rebates given by orthopedic apparatus makers and druggists to physicians who send their patients. The Federation of Medical Syndicates, which has more than 20,000 members and look after public relations for the entire medical profession here, passed resolutions in 1932 condemning fee splitting in any form. At the February 20 meeting of the federation, the statement was made that many physicians have refused to divide the fees received from patients with the practitioner who sent them but that the application of this principle was not as widespread as might be wished for.

Another objective of the proposed Sellier law is an attempt to prevent newspapers from accepting advertisements of treatments by quacks. The extent to which such claims by quacks of all description appear in journals here is beyond all imagination. The ethical standard of the lay press in this country, in this respect, is much below that of reputable newspapers in other countries. Advertising by quacks is such a lucrative source of income that the proposed Sellier law to penalize it will meet with a great deal of opposition.

The Hereditary Factor in Hypertension

At the April 12 meeting of the Académie de médecine of Paris a paper was read on "Recent Studies on the Relation of Heredity in Cases of Hypertension." The author was Dr. G. Richard, who practices at Royat, the French health resort which specializes in the treatment of cardiovascular disturbances. That heredity is an important factor in hypertension has been previously reported by Weitz, Barach, Janeway and others. In association with Etienne, Dr. Richard in 1930 cited their study of 1,150 cases of hypertension. In 637, or 55.4 per cent, the familial factor was the only one responsible for the condition. Even in two thirds, or 21.9 per cent, in whom chronic nephritis, the artificial menopause and syphilis stood out as etiologic factors, there was also a history indicating the influence of heredity. This makes a total of nearly 70 per cent in which the disease was a familial one. This relatively high incidence holds true for a total of 5,000 cases reported by various authors.

In the present paper Dr. Richard reports 1,746 additional cases of hypertension. In 153, or 8.7 per cent, there was an absence of such a condition on the paternal and maternal sides. In 937, or 53.6 per cent, however, either the father or the mother had hypertension. In twenty-six, or 1.5 per cent, the grandparents suffered from this condition. In 265, or 15.2 per cent, although it was impossible to find a distinct hereditary factor, hypertension existed either in the sisters or in the brothers of the patients in 247 cases. In 223, or 12.7 per cent, of these more recently observed 1,746 patients, other etiologic factors were found to exist.

There exists a striking similarity as regards the sequels of hypertension in different members of the same family. In the majority of cases, if the father or mother died as the result of a cerebral hemorrhage, this was the cause of death in the children. This observation held true for successive generations as well as for other sequels of hypertension, such as angina pectoris.

BERLIN

(From Our Regular Correspondent)

April 5, 1938.

Hereditary Diseases of the Visual Apparatus

One effect of the German eugenic legislation has been to bring into prominence all problems of heredity. Great interest therefore attaches to a recent discussion by Professor Dr. Gas-teiger of Frankfurt on the Main of hereditary disorders of the visual apparatus, published in *Forschungen und Fortschritte*. From a scientific point of view an eye is considered blind if the light perception is completely extinguished. In practice, however, one must recognize other concepts of the term blindness and, as the provisions of social legislation indicate, the more literal definition has had to be modified. For example, a traumatic injury to the eyes is considered as having caused blindness if the visual acuity has become so impaired that the person is unable to pursue his occupation and becomes dependent on others. The ophthalmologist Professor Axenfeld has pronounced the dictum that "persons unable to earn their living because of defective vision are blind." According to medical experience, total disability is present if visual acuity has been reduced to around 1/25 normal and cannot be improved by glasses. This definition of blindness is recognized by the social insurance and by the courts which are called on to apply the laws for prevention of hereditarily defective progeny. Furthermore, in the evaluation of blindness not only the central vision but the state of the field of vision must be considered.

Bilateral congenital atrophy of the optic nerve may be adduced as an example of inherited visual defect; this disorder, according to Professor Leber, is transmitted as a recessive characteristic. Other types of congenital atrophy also are based on heredity. Since, however, in addition to the heritable forms there are a whole series of nonhereditary forms of optic atrophy, thorough investigation of the immediate family and the ascendancy is necessary in each case before a diagnosis of an inherited condition is established.

The most important two hereditary diseases of the retina are retinitis pigmentosa and the modifications in the macula lutea associated with amaurotic family idiocy. Gray cataract is the chief congenital disorder of the anterior portion of the eye; this disease assumes many forms, and a many-sided differential diagnosis is necessary before the ultimate decision is reached. Then too there are the heritable changes in the cornea, such as megalocornea, microcornea and the nodular and reticular types of corneal degeneration. Also congenital defects of the uvea are recognized; albinism, for example. The author also mentions congenital motor disturbance such as ptosis and congenital nystagmus and, finally, color blindness. Red-green blindness and the rarer blue-yellow blindness are transmissible as recessive traits. Total color blindness, however, is usually related to nystagmus and high grade visual disturbances. Hereditary factors may also influence the pathogenesis of other anomalies: errors of refraction, myopia, hyperopia, astigmatism; but unless these defects are exceedingly severe they can usually be corrected by the wearing of glasses.

Protection of the Pregnant Workwoman

The 4,000 occupational groups of the German Workers' Front voted to introduce new regulations to become immediately effective for the protection of the pregnant workwoman. Accordingly the pregnant woman in industry now enjoys immunity from notice of dismissal for from eight to twelve weeks following delivery. After certification by a physician, the gravida may now discontinue work six weeks prior to confinement. If she so requests, the woman may be assigned to lighter tasks for from three to four months preceding confinement, but her regular wage must not be reduced. After she ceases work she receives the allowance customarily granted lying-in women, and any difference between that allowance and her regular wage is made good.

The Prevalence of Silicosis

In a recent article in the *Deutsche Bergwerkszeitung* it is stated that the average mortality from silicosis among miners is greater than one death a day. According to statistics for the years 1929-1936, accidental fatalities in the mining industry were reduced by one half during this period, whereas the death rate from silicosis constantly increased. The number of fatalities from silicosis in 1936 was 37 per cent greater than in the year 1929. Silicosis, therefore, constitutes a greater menace to the mine worker of today than the industrial accident.

BUENOS AIRES

(From Our Regular Correspondent)

April 15, 1938.

Transplantation of Parathyroids

Drs. Rojas and Manfredi reported to the Sociedad Argentina de Biología in November 1937 the results of experiments in which they transplanted parathyroids in dogs. The implantation of parathyroids prevented the development of parathyroid tetany and maintained calcium and the phosphates of the blood plasma within normal values. The graft takes well below the capsule of the kidney and also below the muscles. Ten hours after implantation, revascularization of the graft can be seen by microscopic study. The central zone of the graft undergoes degeneration but the peripheral portion does not. Regeneration of the graft begins within twenty days of the operation and it is complete in three or four months. After eight, thirteen and fifteen months the transplanted parathyroids were removed with consequent development, within a few days, of tetany and lowering of the calcium and phosphates of the plasma.

Secretion of Ischemic Kidney Causes Hypertension

Reference has been made to experiments by Houssay and Fasciolo on experimental arterial hypertension induced by compression of the renal artery according to the technic of Goldblatt. Implantation of the ischemic kidney of a hypertensive dog into the neck of a dog recently nephrectomized and treated with chloralose increases the arterial pressure of the receptive dog from 30 to 75 mm. of mercury within five to ten minutes. The blood pressure of receptive dogs does not increase if the transplanted kidney is normal, whether the structure was removed from a normal dog or from a dog in a state of hypertension.

Professors Houssay and Fasciolo recently reported to the Sociedad Argentina de Biología results of further work. Implantation of twenty ischemic kidneys of dogs in hypertension increased the arterial pressure of the receptive dogs in all cases but two. That of twenty-five normal kidneys induced hypertension in only two dogs.

Dr. Taquini verified the fact that ischemic kidneys in place secrete substances that cause permanent arterial hypertension. The constrictive action of the citrated plasma of the blood of the renal vein of hypertensive dogs is more intense than that of the blood plasma of the carotid artery or of the jugular, intestinal and splenic veins of the same dog. The experiments prove that the ischemic kidney secretes substances that cause vasoconstriction. Ultrafiltrates of plasma of the renal vein become inactive, either because the active substances cannot pass through the filter or because they are absorbed by the proteins. The hypertensive action of the ischemic kidney is independent of the action of the adrenals. Implantation of ischemic kidneys in dogs without adrenals causes hypertension. Normal kidneys have an action which is antagonistic to hypertension. Hypertension increases more rapidly and is more intense and persistent when the compression of the renal artery is done on dogs which have only one kidney than on those which have both kidneys. Implantation of ischemic kidneys of dogs

in hypertension in the neck of nephrectomized dogs induces hypertension which does not take place or is slight if the implantation is done in dogs which have both normal kidneys. The results of the experiments show that the ischemic kidney secretes a substance that causes hypertension. It secretes the substance without any intervention from the adrenals. The substance that causes hypertension is neutralized, destroyed or eliminated by normal kidneys.

Personals

Dr. Alejandro Ceballos has been appointed professor of clinical surgery at the Facultad de Medicina of Buenos Aires, to succeed the late Prof. Pedro Chutro.

Drs. Miguel Sussini and José Tobías have been appointed president of the national department of public health and director of public health and sanitation of Buenos Aires, respectively.

Drs. J. A. Taiana, A. Introzzi and Jose M. Fernández have been given scholarships. Dr. Taiana will study surgery at Brussels University. Dr. Introzzi will study at the Mayo Clinic, Rochester, Minn., under a scholarship from the Comisión Nacional de Cultura. Dr. Fernández will study the pathology of leprosy in Paris and São Paulo under a scholarship from the Asociación Argentina para el Progreso de las Ciencias.

Deaths

Dr. Luis Tamini, professor of orthopedic surgery of the Facultad de Medicina of Buenos Aires, died Jan. 17, aged 56.

Dr. Nicolás Lozano died March 3, aged 74. He was a member of the Academia Nacional de Medicina, president of the Comisión Nacional de Asilos y Hospitales regionales, former president of the Red Cross in Argentina and secretary of the National Department of Public Health.

ITALY

(From Our Regular Correspondent)

March 25, 1938.

The Shock Therapy of Schizophrenia

At the convention of Italian neuropsychiatrists at Milan, the discussion of shock therapy of schizophrenia was limited to the two methods based on the work of Meduna and of Sakel. The term "shock therapy" is applied to either. The Meduna method consists in the administration to schizophrenic patients of from 4 to 5 cc. of a 10 per cent solution of metrazol by intravenous injection; epileptoid convulsions can thus be induced. The Sakel method is based on the production of a series of hypoglycemic episodes by intramuscular injection of insulin in daily doses up to 200 international units. The topic was developed by Professors Corberi, Lugiato and Medea, all of Milan, Cerletti of Rome and Riquier of Pavia. Professor Corberi reviewed the favorable results achieved by means of insulin shock in about forty cases at the Milan psychiatric hospital. Corberi's associate, Professor Lugiato, elucidated the economic aspect of the question; he stated that although routine application of the Sakel method would require an augmented hospital personnel it would ultimately result in an annual saving to his institution of some 250,000 lire (\$13,150), since a large number of schizophrenic patients would be discharged as cured.

Professor Cerletti, director of the Clinica Neuropsichiatrica di Roma, reported the following data from his experience: Of about thirty schizophrenic cases, both recent and chronic, which were treated by insulin shock, complete remission of symptoms and clinical cure took place in 42 per cent; amelioration satisfactory enough to permit return home was effected in 37 per cent and slight amelioration in 6 per cent. Experimental research has demonstrated that after repeated and profound insulin comas the brains of dogs undergo grave alterations, in part reversible and irreversible changes of a toxic character, in part changes more directly referable to disturbances of the

circulation. The author emphasized the first group of alterations, which tend to be constant. He adduced evidence to show that insulin coma entails the destruction of a certain number of neurons. The more labile frontal neurons bear the brunt of the whatever injury occurs. These particular neurons represent the latest cerebral formation to develop. It has been noted that in the human brain new neurons may form till the fortieth year. Accordingly there is nothing incongruous in the assumption that a large part of the psychic manifestations in schizophrenia correspond to modifications of functional, associative complexes of relatively recent origin and that therefore the mechanism of shock therapy is a sudden destruction of such complexes.

Professor Donaggio of Bologna expressed the opinion, based on histologic data, that insulin therapy induces histochemical alterations of the myelin.

Professor Mueller, director of the Psychiatric Hospital, Berne, reported the effects of insulin shock treatment on 495 schizophrenic patients at twenty-two different psychiatric institutions. In nearly 60 per cent of the more recent cases complete remissions occurred; about 40 per cent of all cases were considered cured. The mortality was about 1 per cent; recidivation was reported in less than 6.5 per cent.

Metrazol therapy, according to Meduna's method, also came in for ample discussion. The majority had experimented with this technic and declared themselves favorable to its use.

Bertolani described his experiments with convulsions induced by injections of ammonium chloride, with which he has elicited some favorable therapeutic results.

Rizzatti presented two schizophrenic patients who had been cured by the Moniz surgical treatment.

Research on Conditions Due to Low Temperatures

A center for research on the pathology and therapy of conditions due to the low temperatures of mountain regions has been established at Genoa. The activities concern research on thermal adaptation of man and animals to low temperatures, the pathology and treatment of lesions due to cold, particularly the use of short wave therapy, and the prophylaxis of such lesions, especially as the latter occur in the army and in connection with winter sports. Professor Sabatini, director of the new center, has obtained the collaboration of the army sanitary corps. Besides assigning a major of the medical corps to participate, the general staff of the army sanitary corps has ordered that soldiers severely enough affected with lesions due to cold to require hospitalization should be sent to the Military Hospital at Genoa, where special accommodations will be reserved.

Marriages

JAMES MURRAY ELLZEY JR., Chestnut Hill, Pa., to Miss Florence E. Haines of Frankford, April 8.

JOSEPH EDWARD GLADSTONE, Exmore, Va., to Miss Doretta Anne Roberts of Cape Charles, April 9.

ALBERT S. J. CLARKE, Clarendon, Ark., to Miss Ruth Shaw Smith of Nashville, Tenn., April 10.

WILLIAM BERNARD CARPENTER, Lovettsville, Va., to Miss Eilene Ward of Richmond, April 6.

JAMES LLOYD MIMS, Chester, S. C., to Miss Virginia Maynor of Winston-Salem, N. C., April 9.

RICHARD CAMPBELL MANSON to Miss Mary Kathryn Taylor, both of Richmond, Va., April 23.

CLARENCE MCNAIR WALLACE to Miss Ruth Allene Good, both of Hummelstown, Pa., April 1.

SYDNEY L. HARRIS, New Rochelle, N. Y., to Miss Natalie Crandall of New York in May.

WALTER SCOTT to Miss Mary Elizabeth Van Dyke, both of Sioux City, Iowa, March 17.

Deaths

Willson Orton Bridges, Omaha; University of the City of New York Medical Department, 1879; past president of the Nebraska State Medical Association, of the Omaha-Douglas County Medical Society and the Missouri Valley Medical Association; professor emeritus of medicine at the University of Nebraska College of Medicine, in 1911 associate dean and dean from 1914 to 1920; was a delegate to international medical congresses at Madrid, Budapest and London; in 1928 received the honorary degree of doctor of laws from the University of Nebraska; aged 81; died, March 4, in the Methodist Hospital of cerebral arteriosclerosis.

Charles Peter White * Wilmington, Del.; University of Pennsylvania Department of Medicine, Philadelphia, 1902; past president of the Medical Society of Delaware and past president and secretary of the Newcastle County Medical Society; member of the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; on the staffs of the Delaware and Wilmington General hospitals; ophthalmologist to the Delaware State Hospital, Farnhurst; aged 67; died, April 13, of heart disease.

Eustace Lincoln Fiske * Glendale, Calif.; Harvard University Medical School, Boston, 1886; member of the Massachusetts Medical Society; member, 1897-1899, and president in 1899 of the city council of Fitchburg, Mass., and for twelve years chairman of the board of health; visiting physician to the Burbank Hospital, Fitchburg, 1900-1922, and chairman of the board, 1910-1922; aged 77; died, March 20, in the Physicians and Surgeons Hospital of pneumonia.

Donald Stansbury Adams * Worcester, Mass.; University of Virginia Department of Medicine, Charlottesville, 1917; member of the New England Surgical Society; fellow of the American College of Surgeons; served during the World War; on the staffs of the Memorial Hospital, Worcester, Masonic Hospital, Shrewsbury, Webster District Hospital, Webster, and Harrington Memorial Hospital, Southbridge; aged 45; died, March 13, of a self-inflicted bullet wound.

William H. Kennedy, Indianapolis; Medical College of Indiana, Indianapolis, 1903; member of the House of Delegates of the American Medical Association in 1926; assistant professor of radiology at the Indiana University School of Medicine; member of the Indiana State Medical Association and the American Radium Society; aged 61; died, April 21, in the Robert W. Long Hospital of myeloid leukemia.

Thomas Marcus Bull * Naugatuck, Conn.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1887; past president of the New Haven County Medical Society; member and for many years president of the board of education of Naugatuck; on the staff of the Waterbury Hospital; aged 74; died, March 28, at his winter home in Winter Park, Fla., of pneumonia.

Logan Elmore Farthing * Wilmington, N. C.; University of North Carolina School of Medicine, Chapel Hill, 1906; past president and secretary of the New Hanover County Medical Society; past president and secretary of the staff of the James Walker Memorial Hospital; on the staff of the Bulluck Hospital; aged 58; died, March 31, of amebic colitis and perforation of the sigmoid with abscess.

Tolbert Barton Hinson * Enid, Okla.; Hospital College of Medicine, Louisville, 1905; past president of the Oklahoma State Hospital Association; fellow of the American College of Surgeons; on the staff of the Enid Springs Sanitarium and Hospital; served during the World War; aged 56; died, March 21, of pulmonary embolus following fracture of the hip.

William Carl Haupt, Brooklyn; University and Bellevue Hospital Medical College, New York, 1907; member of the Medical Society of the State of New York; fellow of the American College of Surgeons; on the staff of the Brooklyn Eye and Ear Hospital and Norwegian Lutheran Deaconesses' Home and Hospital; aged 55; died, March 23.

Frank P. Patterson, Vancouver, B. C., Canada; McGill University Faculty of Medicine, Montreal, Que., 1898; member of the North Pacific Surgical Association and the American Academy of Orthopedic Surgeons; fellow of the American College of Surgeons; aged 62; died, February 3.

Earl Aden Hogan, New Orleans; Northwestern University Medical School, Chicago, 1901; formerly assistant professor of medical aspects of life insurance, Tulane University Graduate School of Medicine; veteran of the Spanish-American and World wars; aged 63; died, March 16.

James Jackson Minot * Boston; Harvard University Medical School, Boston, 1878; honorary president and for many years vice president of the Boston Tuberculosis Association; consulting physician to the Massachusetts General Hospital; aged 85; died, April 30, of arteriosclerosis.

Samuel William Evans, Cleveland; Western Reserve University Medical Department, Cleveland, 1895; member of the Ohio State Medical Association; served during the World War; aged 63; died, March 14, in St. Alexis Hospital of coronary sclerosis and bronchopneumonia.

William Burnett, Montreal, Que., Canada; University of Bishop College Faculty of Medicine, Montreal, 1892; served with the Canadian Army during the World War; for many years on the staff of the Woman's General Hospital, Westmount; aged 67; died, March 8.

James Lindsay France * Wilmington, Del.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1892; veteran of the Spanish-American War; on the staff of the Delaware Hospital; aged 67; died, March 14, of pneumonia.

Robert Henry Snowden * Medical Inspector, Commander, U. S. Navy, Bremerton, Wash.; University of Tennessee College of Medicine, Memphis, Tenn., 1915; entered the navy in 1917; aged 47; died, February 4, on board the U. S. S. *Mississippi* of thrombosis.

Frederick William Heysett * Ludington, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1894; past president of the Mason County Medical Society; on the staff of the Paulina Stearns Hospital; aged 68; died, March 12.

John Andrew Brewin, Everett, Mass.; North Carolina Medical College, Davidson, 1904; member of the Massachusetts Medical Society; formerly chairman of the board of health; aged 61; died, March 7, at the Baker Memorial Hospital, Boston, of pneumonia.

Arthur Richmond Crandell * Taunton, Mass.; Harvard University Medical School, Boston, 1896; member of the New England Pediatric Society; for many years member of the school board; on the staff of the Morton Hospital; aged 67; died, March 18.

Calvin Daniel Christ * Orlando, Fla.; College of Physicians and Surgeons, Baltimore, 1905; past president of the Orange County Medical Society; on the staff of the Orange General Hospital; at one time county physician; aged 59; died, March 19.

Edgar Vernon Henry * Beaumont, Texas; Chicago College of Medicine and Surgery, 1915; served during the World War; on the staffs of the Hotel Dieu Hospital and St. Therese Hospital; aged 46; died, March 19, in the John Sealy Hospital, Galveston.

Frederick Ernst Buchen, Darby, Mont.; Vanderbilt University School of Medicine, Nashville, Tenn., 1899; formerly vice president of the Medical Association of Montana; aged 72; died, March 1, at Hamilton of cirrhosis of the liver and nephritis.

Pearl S. Windham * Saginaw, Mich.; Detroit College of Medicine, 1902; past president of the Saginaw County Medical Society; fellow of the American College of Surgeons; on the staff of the Saginaw General Hospital; aged 62; died, February 23.

Harry William Dickerson, San Diego, Calif.; Washington University School of Medicine, St. Louis, 1904; member of the California Medical Association; aged 63; died, March 24, in the Mercy Hospital of Hodgkin's disease and secondary anemia.

John Andrew Heinlein, Bridgeport, Ohio; Jefferson Medical College of Philadelphia, 1886; formerly health officer, postmaster, and member of the school board; aged 76; died, March 3, of bronchopneumonia, acute bronchitis and arteriosclerosis.

Victor Biart * Captain, U. S. Army, retired, Norwalk, Conn.; Missouri Medical College, St. Louis, 1876; entered the army as an assistant surgeon in 1878 and retired as captain in 1891 for disability in line of duty; aged 90; died, March 26.

George A. Brown, Banner Elk, N. C.; University College of Medicine, Richmond, 1897; member of the Medical Society of the State of North Carolina; aged 68; died, March 28, of acute dilatation of the heart, hypertension and nephritis.

Robert Oliver Baldwin, Oakland, Calif.; University of California Medical Department, San Francisco, 1895; formerly county coroner; aged 72; died, March 28, in the Peralta Hospital of coronary thrombosis and secondary anemia.

J. Davis Forster, New Smyrna, Fla.; Barnes Medical College, St. Louis, 1896; member of the Florida Medical Association; served during the World War; aged 67; died, March 22, in the Veterans Administration Facility, Bay Pine.

Wilson Luther Gleason, Fairview, Okla.; Drake University College of Medicine, Des Moines, Iowa, 1884; Bennett College of Eclectic Medicine and Surgery, Chicago, 1888; aged 79; died, March 28, of cerebral hemorrhage.

Ben Neal Ard, Dallas, Texas; Baylor University College of Medicine, Dallas, 1915; member of the State Medical Association of Texas; served during the World War; aged 53; died, March 29, of carcinoma of the esophagus.

John Otto Ficke, Salem, Mo.; Beaumont Hospital Medical College, St. Louis, 1900; member of the Missouri State Medical Association; county coroner; aged 66; died suddenly, March 23, of cerebral hemorrhage.

Thomas Emmett Farrell, Seneca, Wis.; Milwaukee Medical College, 1901; member of the State Medical Society of Wisconsin; served during the World War; aged 61; died, February 2, of coronary thrombosis.

Charles Frederick Colfax Hancock Ⓢ Jeffersonville, Ind.; Medical College of Ohio, Cincinnati, 1887; formerly member of the state legislature; aged 71; died, March 27, of cerebral hemorrhage and arteriosclerosis.

Cecil Denham, Buckhannon, W. Va.; College of Physicians and Surgeons, Baltimore, 1901; served during the World War; formerly superintendent of the Weston (W. Va.) State Hospital; aged 64; died, March 4.

Sylvan M. Pearman, Pasadena, Calif.; Homeopathic Medical College of Missouri, St. Louis, 1886; Hahnemann Medical College and Hospital of Philadelphia, 1891; aged 79; died in March of diabetes mellitus.

J. P. Heath, Fishers, Ind.; College of Physicians and Surgeons of Indiana, Indianapolis, 1877; Medical College of Indiana, Indianapolis, 1879; aged 85; died, March 2, in the Methodist Hospital, Indianapolis.

Henry Herman Claus Heuck, Orange, Calif.; Chicago College of Medicine and Surgery, 1912; formerly associated with the U. S. Public Health Service; aged 54; died, March 30, of cerebral hemorrhage.

Theodule Bruneau, Montreal, Que., Canada; Laval University Medical Faculty, Montreal, 1896; professor of clinical medicine at the University of Montreal Faculty of Medicine; aged 64; died, February 9.

Clarence Edward Persons, Marshall, Minn.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1877; member of the Minnesota State Medical Association; aged 90; died, January 4.

Robert Park Adams, Atlanta, Ga.; University of Georgia Medical Department, Augusta, 1904; member of the Medical Association of Georgia; aged 60; died, March 14, of chronic nephritis and arthritis.

Joseph Churchill Patton, Toronto, Ont., Canada; M.B. University of Toronto Faculty of Medicine in 1888 and M.D. Victoria University Medical Department, Coburg, 1888; aged 87; died, February 7.

Andrew Y. Hatchett, Bloomfield, Ky.; Kentucky School of Medicine, Louisville, 1891; aged 72; died, March 23, in the Kentucky Baptist Hospital, Louisville, of pulmonary embolism and diabetes mellitus.

Victor Eugene Putnam, San Francisco; University of California Medical Department, San Francisco, 1896; member of the California Medical Association; aged 66; died, March 11, of cerebral hemorrhage.

Joseph Georges Albert Bouvier, St. Albert, Ont., Canada; School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, 1908; aged 56; died, February 12.

Joseph C. R. Doggett Ⓢ Crane, Mo.; Barnes Medical College, St. Louis, 1905; also a druggist; aged 56; died, March 29, in St. John's Hospital, Springfield, of nephritis, arteriosclerosis and hypertension.

Granville Howard Twining Ⓢ Mobridge, S. D.; Rush Medical College, Chicago, 1910; fellow of the American College of Surgeons; surgeon to the Mobridge Hospital; aged 61; died, February 4.

John Sidney Branch, Lettsworth, La.; University of Louisville (Ky.) Medical Department, 1881; member of the Louisiana State Medical Society; aged 78; died, March 8, of coronary thrombosis.

James Robert Floyd, Fort Worth, Texas; Memphis (Tenn.) Hospital Medical College, 1887; member of the State Medical Association of Texas; aged 77; died, March 31, of pneumonia.

Herbert Charles Stanton, Clifton Heights, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1901; medical director of the Burn Brae Hospital; aged 63; died, February 8.

Louis C. Mullikin, Los Angeles; Jefferson Medical College of Philadelphia, 1892; aged 77; died, March 6, in the Los Angeles County General Hospital of hypertensive heart disease.

M. G. Herrell, Powell Station, Tenn.; Tennessee Medical College, Knoxville, 1906; member of the Tennessee State Medical Association; county physician; aged 58; died, February 4.

Edward Hayden Ⓢ Cashmere, Wash.; National Medical University, Chicago, 1907; Chicago College of Medicine and Surgery, 1908; aged 66; died, March 9, of coronary disease.

Elmer Ellsworth Hendershot, Tecumseh, Mich.; University of Michigan Department of Medicine and Surgery, 1886; bank president; aged 76; died, March 8, of coronary thrombosis.

Howard E. Ezell, Oliver, Ga.; Atlanta College of Physicians and Surgeons, 1902; formerly mayor; aged 59; died, March 15, of essential hypertension and cerebral hemorrhage.

George Albert Slocumb, Cohasset, Mass.; Boston University School of Medicine, 1880; served the Hahnemann Hospital, Worcester, in various capacities; aged 80; died, January 31.

Robert Lawson Hope, Atlanta, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1881; past president of the county board of education; aged 78; died, February 25.

Deddo H. W. Borgman, Louisville, Ky.; University of Louisville Medical Department, 1894; member of the Kentucky State Medical Association; aged 65; died, January 23.

William E. Wells, Lakewood, Ohio; Homeopathic Hospital College, Cleveland, 1885; formerly on the staff of the Huron Road Hospital, Cleveland; aged 76; died, February 6.

John William Folk, Newberry, S. C.; Medical College of the State of South Carolina, Charleston, 1874; formerly member of the state legislature; aged 86; died, February 3.

Frederick Burr Dezell Ⓢ Lynn, Mass.; Albany (N. Y.) Medical College, 1896; on the courtesy staff of the Lynn Hospital; aged 70; died, February 2, of aortic stenosis.

Melville G. Evans, Portland, Ore.; St. Louis College of Physicians and Surgeons, 1904; aged 65; was found dead in his garage, March 29, of carbon monoxide poisoning.

Herbert Henderson Sinclair, Walkerton, Ont., Canada; University of Toronto Faculty of Medicine, 1894; Trinity Medical College, Toronto, 1894; aged 67; died, February 1.

John H. Riera, Fontainebleau, France; University of Pennsylvania Department of Medicine, Philadelphia, 1885; formerly a resident of Philadelphia; aged 78; died, March 5.

Leverette H. Crapp, St. Louis; St. Louis College of Physicians and Surgeons, 1900; aged 64; died, March 23, of hemiplegia, arteriosclerosis and cerebral hemorrhage.

William Francis Holmes, Florence, S. C.; Howard University College of Medicine, Washington, D. C., 1910; aged 69; died, March 9, of influenza and pneumonia.

Joseph P. Hennerich, St. Louis; St. Louis Medical College, 1887; member of the Missouri State Medical Association; aged 78; died, March 30, of coronary occlusion.

John Franklin Anderson, Chicago; Northwestern University Medical School, Chicago, 1930; member of the Illinois State Medical Society; aged 45; died, March 19.

Emery Milton Goodwin, East Cleveland, Ohio; Western Reserve University Medical Department, Cleveland, 1895; aged 69; died, March 23, of carcinoma of the hand.

Walter Bozeman Moore, Repton, Ala.; Birmingham Medical College, 1903; member of the Medical Association of the State of Alabama; aged 63; died, January 16.

Leidy L. Cope, Hatfield, Pa.; Jefferson Medical College of Philadelphia, 1883; formerly member of the board of health and school board; aged 78; died, February 8.

Francis O. Ritter, Allentown, Pa.; University of Maryland School of Medicine, Baltimore, 1881; formerly bank president; aged 79; died, February 11, of cholecystitis.

Evan Ardiel, Washtucna, Wash.; Western University Faculty of Medicine, London, Ont., Canada, 1906; aged 57; died, March 21, in Portland, Ore., of thrombosis.

John Henry Chapman, Tanner, W. Va.; University of Louisville (Ky.) Medical Department, 1895; served during the World War; aged 71; died, February 20.

Ezra McKnight Davis, Mayesville, S. C.; George Washington University School of Medicine, Washington, D. C., 1908; aged 54; was shot and killed, March 11.

Edwin Garfield Festerling Ⓜ Milwaukee; University of Pennsylvania School of Medicine, Philadelphia, 1911; aged 57; died, March 25, of coronary thrombosis.

Samuel Q. Bass, Cincinnati; Pulte Medical College, Cincinnati, 1896; served during the World War; aged 65; died, March 3, of hypertensive heart disease.

Theodore F. H. Spreng, Los Angeles; Hahnemann Medical College and Hospital, Chicago, 1879; aged 85; died, March 27, of arteriosclerosis and hypertension.

Charles Theodore Cutting, Los Angeles; Hahnemann Medical College and Hospital of Philadelphia, 1898; aged 61; died, March 7, of rupture of the heart.

C. F. Guthrie, Alfred, Ohio; College of Medicine and Surgery, Chicago, 1895; aged 78; died, March 3, of mitral regurgitation and parkinsonian disease.

John James Bourn, Palo Alto, Calif.; Rush Medical College, Chicago, 1896; aged 67; died, March 13, in the Palo Alto Hospital, of disease of the adrenals.

William Lee Calvert, Louisville, Ky.; Louisville Medical College, 1906; served during the World War; aged 53; died, March 21, of cerebral hemorrhage.

George P. Sanders, Stephens, Ark.; Memphis (Tenn.) Hospital Medical College, 1904; member of the Arkansas Medical Society; aged 64; died, January 15.

Frances Harriet Drew, Quincy, Mass. (licensed in Massachusetts under the Act of 1907); aged 85; died, March 12, of myocarditis and bronchopneumonia.

John Azerre Flowers, St. Louis; Chicago Medical School, 1918; Meharry Medical College, Nashville, Tenn., 1920; aged 54; died, March 25, of peritonitis.

Thomas L. Hood, West Monroe, La.; Louisville (Ky.) Medical College, 1887; formerly mayor and member of the state senate; aged 75; died, January 9.

Jacob Wade Paul Goudy, Bristol, Maine; University of Vermont College of Medicine, Burlington, 1896; aged 72; died, March 2, of coronary thrombosis.

William Thomas Little Ⓜ Paducah, Ky.; University of Louisville School of Medicine, 1907; served during the World War; aged 53; died, February 2.

Jesse Vincent Gilbert, Maricopa, Calif.; College of Physicians and Surgeons, Baltimore, 1896; aged 74; died, March 6, of carcinoma of the stomach.

Clifford E. Flaningam, Las Cruces, N. M.; University of Louisville (Ky.) Medical Department, 1915; aged 48; died, March 17, of heart disease.

William D. Corse, Baltimore; University of Maryland School of Medicine, Baltimore, 1887; aged 71; died, March 13, of carcinoma of the tongue.

Nathaniel Ellis Oliver, Costa Mesa, Calif.; Chicago Medical College, 1880; aged 81; died, February 27, of chronic myocarditis and arteriosclerosis.

Harlan L. Byington, Risingsun, Ohio; Physio-Medical Institute, Cincinnati, 1876; aged 86; died, March 29, of myocarditis and mitral regurgitation.

John T. Gill, Echo, Minn.; New York Homeopathic Medical College, New York, 1886; aged 79; died, February 21, of acute cardiac dilatation.

Carl Peter Fallen, Norfolk, Conn.; Dartmouth Medical School, Hanover, N. H., 1893; aged 75; died, March 30, of cerebral arteriosclerosis.

Isaac Cecil Walker Ⓜ Marion, Ill.; St. Louis College of Physicians and Surgeons, 1897; aged 67; died, February 26, of pulmonary tuberculosis.

Izatus L. Smith, Syracuse, Neb.; Kentucky School of Medicine, Louisville, 1890; aged 83; died, February 10, of cholangitis and cholelithiasis.

Peter Leroy Hartman, Colon, Mich.; Jefferson Medical College of Philadelphia, 1890; aged 71; died, March 30, of cerebral hemorrhage.

Claude George Burgess Ⓜ Detroit; Detroit College of Medicine, 1903; aged 60; died, March 14, in the Harper Hospital of pneumonia.

Lynn Moore Barnes, Decatur, Ill.; Harvard University Medical School, Boston, 1900; aged 64; died, March 13, of chronic nephritis.

Oliver Fernald Cushing, Thomaston, Maine; Medical School of Maine, Portland, 1883; aged 76; died, March 17, of angina pectoris.

Edward R. Flinchbaugh, Cincinnati; Cincinnati College of Medicine and Surgery, 1895; aged 69; died, March 7, of arteriosclerosis.

Lawrence A. Wagner, Youngstown, Ohio; Marion-Sims College of Medicine, St. Louis, 1899; aged 73; died, March 21, of pneumonia.

William D. Hutto, Greenwood, S. C.; Medical College of the State of South Carolina, Charleston, 1882; aged 79; died, February 25.

Aslan Nacciarone, New York; Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1898; aged 66; died in February.

Harlin Clyde Henderson, Carpinteria, Calif.; Rush Medical College, Chicago, 1896; aged 63; died, March 6, of cerebral hemorrhage.

Joshua Newton Mack, Halifax, N. S., Canada; Bellevue Hospital Medical College, New York, 1875; aged 93; died, February 7.

Edward Sims Hawkins, Cedar Hill, Tenn.; University of Louisville (Ky.) Medical Department, 1880; aged 88; died, January 15.

Isaac Newell Eastman, Groton, Vt.; Kentucky School of Medicine, Louisville, 1893; aged 71; died, March 16, of chronic nephritis.

Robert W. Chalfant, Bellefontaine, Ohio; Eclectic Medical Institute, Cincinnati, 1882; aged 85; died, March 1, of diabetes mellitus.

John Becker, Milwaukee; Fort Wayne (Ind.) College of Medicine, 1890; aged 84; died, March 11, of cerebral hemorrhage.

Charles T. Shinn, Stonehurst, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1891; aged 86; died, February 7.

John Pinkham Rice, San Antonio, Texas; American Medical College, St. Louis, 1877; aged 84; died, February 23, of senility.

Warren T. Binion, Cumby, Texas (licensed in Texas, under the Act of 1907); aged 82; died, March 21, of carcinoma of the larynx.

Humberto Cuen, Claremore, Okla.; St. Louis University School of Medicine, 1934; aged 28; died, March 28, of heart disease.

Ira Wickliff Bouldin, Santa Ana, Calif.; Hahnemann Medical College and Hospital, Chicago, 1886; aged 80; died, March 30.

Robert French Ferguson, Clarksville, Tenn.; University of Nashville Medical Department, 1876; aged 82; died, January 21.

D. Iris Cochran, Hamilton, Ohio; Cleveland Homeopathic Medical College, 1903; aged 60; died, March 20, of carcinoma.

Walter Lewis Hallet, Brockton, Mass.; Harvard University Medical School, Boston, 1886; aged 78; died, March 9.

Henry Franklin Zink, Tulsa, Okla.; Eclectic Medical University, Kansas City, Mo., 1906; aged 70; died, February 21.

John Franklin Clark, Rayville, Mo.; Northwestern Medical College, St. Joseph, 1893; aged 82; died, March 23.

Henry D. Rinehart, Pasadena, Calif.; Long Island College Hospital, Brooklyn, 1886; aged 74; died in February.

Charles De Witt Hibbetts, Naples, Texas; Barnes Medical College, St. Louis, 1904; aged 58; died, March 1.

Samuel Lerner, Quincy, Mass.; St. Louis College of Physicians and Surgeons, 1921; aged 42; died, January 1.

George M. Bradford, Mount Morris, Pa.; Pulte Medical College, Cincinnati, 1889; aged 74; died, February 18.

Eugene Maurice Griffin, Crider, Ky.; Hospital College of Medicine, Louisville, 1897; aged 68; died, March 10.

Eugene Coffeen, Redondo Beach, Calif.; Hering Medical College, Chicago, 1900; aged 84; died, March 23.

John Angus Garrard, Roberta, Ga.; Birmingham (Ala.) Medical College, 1913; aged 58; died, March 15.

J. F. Evans, Stephens, Ark. (licensed in Arkansas in 1903); aged 68; died, March 14, of acute myocarditis.

L. A. Hill, Hot Springs National Park, Ark. (licensed in Arkansas in 1903); aged 65; died, March 21.

W. P. Wilson, Ocala, Fla.; Meharry Medical College, Nashville, Tenn., 1897; aged 68; died, February 25.

Bureau of Investigation

THE TRENCH EPILEPSY CURE FRAUD

A Bromide Mixture Sold from Toronto and Dublin is
Denied the U. S. Mails

Trench's Remedies, Ltd., at Dublin, Ireland, and Toronto, Canada, was declared by the Postoffice Department to be a scheme for obtaining money through the mails by means of false and fraudulent pretenses and was excluded from the United States mails on March 30, 1938.

More than a quarter of a century ago THE JOURNAL published an article in this department on "Trench's Remedy" and gave the essential facts regarding it, together with the results of analyses made by the British Medical Association. It was

TRENCH'S REMEDY

FOR


Epilepsy and Fits

WITH DIRECTIONS FOR TREATMENT

AND

Testimonials, Certificates, Etc.

TRENCH'S REMEDY

TRADE

MARK

TRENCH'S REMEDIES, Limited, 33 South Frederick Street,
DUBLIN, IRELAND.

AND

107 St. James' Chambers, Corner of Church and Adelaide Streets,
TORONTO, CANADA

shown then that the stuff came in two forms: a liquid as sold in the British Isles and a powder as sold in the United States, as well as in Canada and in other parts of the British empire.

The liquid contained 70 grains of potassium bromide and 10 grains of ammonium bromide to the fluidounce, with sugar to sweeten and fuchsin to color it. The powder was a mixture of 61 parts of potassium bromide and 39 parts of brown sugar.

The memorandum of the Solicitor of the Postoffice Department, recently sent to the Postmaster General recommending the issuance of a fraud order, states that Trench's Preparation has been advertised "in various publications throughout the United States." The address given in such advertisements is usually that of the Toronto branch of this mail-order quackery. Those who answer the advertisement receive a form letter from Trench's Remedies, Ltd., in which the prospective victim is told, in effect, that the use of the Trench product will cure epilepsy.

Part of the advertising ballyhoo is a "Certificate of Analysis" said to have been given by "Granville H. Sharpe, F.C.S., Analytical and Consulting Chemist," London, England. The "analysis" gives no information regarding the composition of the "patent medicine" but does describe it as a "skillfully and judiciously compounded preparation." As THE JOURNAL pointed out twenty-six years ago, Granville H. Sharpe was a faker who

for years made a business of furnishing—at a price—"certificates" that could be used as advertising assets.

The government chemists found the Trench preparation to be essentially what the British Medical Association had reported in 1912. Because a mixture of bromides and brown sugar will not cure epilepsy or restore epileptics to normal health, as claimed, the Trench business was declared a fraud.

THE LYTHEROL FRAUD

George P. Seiler's Lyteric Products Company
Debarred from the U. S. Mails

"Lytherol" was sold through the mails as a cure for hay fever, head colds, sinusitis and passive congestion of the nasal canal. It was put on the market by one George P. Seiler, a real estate salesman of New Orleans. Government chemists reported that Lytherol consisted of "fatty oil, small amounts of oleic acid and traces of oil of lavender." It was to be dropped into the nostrils and "snuffed up" as far back as possible.

Seiler claimed to have learned of this wonder from a Greek whom he met in New York several years ago. The preparation was found to have neither germicidal nor even antiseptic action but was merely slightly emollient.

Seiler submitted no evidence for the claims made for his nostrum and made no appearance at the hearing. He contented himself with a mere denial of the charge of fraud. The charge, however, stood, and on March 12, 1938, a fraud order was issued against the Lyteric Products Company.

Correspondence

THERAPY OF JAUNDICE

To the Editor:—Regarding the article on the "Therapy of Icterus (Jaundice)" (THE JOURNAL, March 5, p. 732) I believe that section E, paragraph 3, of treatment, in which it is stated regarding the use of intravenous dextrose that it must be given intravenously as then the glycogen is deposited in the liver more liberally than when the sugar is taken by mouth, should be changed to:

In patients who cannot take oral dextrose because of vomiting or drowsiness it must be given intravenously, but in patients who can take and retain dextrose by mouth it should be given orally, since this method is simpler and more convenient. The glycogen deposit in the liver is practically the same in the two methods.

This suggestion is advanced on the basis of Althausen's paper on "Deposition of Glycogen in Normal and in Experimentally Damaged Livers After Oral and Intravenous Administration of Dextrose" in the *American Journal of Digestive Diseases*, January 1938, page 752, which seems to indicate the effectiveness of giving dextrose in either way when the liver is damaged.

FRANKLIN W. WHITE, M.D., Boston.

TREATMENT OF GIARDIASIS

To the Editor:—In THE JOURNAL of March 12, page 834, I read with interest your answer on the treatment for Giardia (Lamblia). There is a treatment against this parasite which has been successfully used in hundreds of cases. It was first suggested and tried by Galli-Valerio, professor of parasitology at the University of Lausanne (Galli-Valerio, Bruno: La lamblia et son traitement par l'atébriane, *Schweiz. med. Wchnschr.* 67:1121 [Dec. 11] 1937. Tecon, R. M.: La lamblia et son traitement, *J. belge gastro-entérol.* 5:315 [April] 1937; La lamblia et son traitement par l'atébriane, *Schweiz. med. Wchnschr.* 68:247 [March 12] 1938). The drug is a salt of amino acridine, which is used in the treatment of malaria and is known under the name of atabrine. The dose usually ordered is 0.1 Gm. three times a day for five days, but I showed recently that complete destruction of the parasites and cure of the patient could be obtained with 0.1 Gm. once a day for two or three days.

RENÉ MAURICE TECON, M.D., Lausanne, Switzerland.

NERVE INJURIES AND DEXTROSE

To the Editor:—In the article March 26 by Dr. George B. Hassin there are references, both in the heading of the article and in the text, to nerve injuries caused by intravenous injections of dextrose. After reading the article I am at a loss to understand why dextrose was included as part of the cause of these injuries, since the case records seem to indicate quite clearly that the injuries were incident to the injections and not to the substance injected.

HOMER K. NICOLL, M.D., Chicago.

NOTE.—The letter was referred to Dr. Hassin, who writes:

To the Editor:—It would be absurd to claim that dextrose injected intravenously caused the nerve injuries in the eight cases quoted in my article. Among the probable causes of the injuries—direct lesion to the nerves, edema, pressure or other factors—I did not mention dextrose. I included it in the caption because no other substance is used so extensively, in so large amounts and through so many hours as the solutions of dextrose. Any other substance injected intravenously under similar circumstances would give complications as described, which, of course, like the injections of dextrose, would be accidental and not caused by the injected substance itself.

GEORGE B. HASSIN, M.D., Chicago.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

INTRADERMAL AND PRECIPITIN TESTS FOR TRICHINOSIS

To the Editor:—Please give me some information regarding the Bachman intradermal test for trichinosis, including the technic and information as to where I can obtain the material for making the test.

ALBERT A. SCHULTZ, M.D., Fort Dodge, Iowa.

ANSWER.—The antigen in the Bachman intradermal test for trichinosis consists of an extract of trichinella larvae in Coca's solution (sodium chloride 0.7 per cent, sodium bicarbonate 0.05 per cent and phenol [carbolic acid] 0.4 per cent in distilled water). The test is done as follows: 0.1 cc. of a 1:10,000 dilution in Coca's solution of the trichinella antigen is injected intradermally into the flexor surface of the forearm and the same amount of Coca's solution injected into the other arm as a control. A delayed or immediate type of reaction may develop, depending on the stage of the illness. During the first week of the disease there is usually a delayed type of reaction consisting of erythema, and edema at the site of the injection from twelve to twenty-four hours after injection. The immediate type of reaction usually is obtained during the second week of the injection. Within five minutes after the injection a blanched wheal appears, sometimes with pseudopodia running out from it. A pronounced area of erythema surrounds the wheal. The reaction reaches its maximum in one hour and then gradually subsides. This type of reaction may be elicited months and years after the acute illness has subsided. A more reliable test in the diagnosis of trichinosis, and utilizing the same antigen in a dilution of 1:100, is the precipitin test. This is done by overlaying 0.5 cc. of blood serum in a small tube with an equal amount of the 1:100 antigen. A control test is run in a second tube with the same amount of serum overlaid with Coca's solution. The tubes are placed in a water bath at 37.5 C. for one hour. A positive test shows a white ring at the junction of the antigen and serum. This test usually becomes positive during the third week of the illness. At present there is no available commercial preparation of the antigen. The method of preparing the antigen and results of its clinical application are discussed in the following:

Augustine, D. L., and Theiler, Hans: Precipitin and Skin Tests as Aids in Diagnosing Trichinosis, *Parasitology* 24: 60 (March) 1932.
Spink, W. W.: Trichinella Antigen: Further Observations on Its Use in the Diagnosis of Trichinosis, *New England J. Med.* 216: 5 (Jan. 7) 1937.

DESENSITIZATION IN ARRESTED PULMONARY TUBERCULOSIS

To the Editor:—A woman aged 21, a school teacher, has had symptoms of hay fever for the last ten years within two days of August 15, with the exception of 1937. Last summer they occurred July 15 and were especially severe, lacrimation being so profuse that she could not see. I advised a trip 150 miles north, where ragweed is scarce. I have no information regarding the presence of grasses in that locality, but in two days after arriving she was symptom free. Symptoms returned immediately on return six days later. About August 1 she again drove north for relief and remained two weeks symptom free, at which time she returned, only to suffer from hay fever until late in September. Her pollen scratch tests at present are as follows: elm, 1 plus; oak, trace; blue grass (June), 4 plus; timothy, 3 plus; red top, 4 plus; giant ragweed, 4 plus; short ragweed, 4 plus. Corn smut, yeast and alternaria are negative. The past history is negative with the exception that in 1935 she was bedridden with pleurisy. Although there are a few subcutaneous rales in the right apex, the x-ray report states "pulmonary tuberculosis apparently arrested." Is there any contraindication to desensitizing three years after active pulmonary tuberculosis has been arrested? Would a shotgun mixture of mixed grasses and short and tall ragweed defeat its own purpose? If not, what concentrations would you advise? Have you any other suggestions or comments regarding desensitization of this patient?

M.D., New York.

ANSWER.—Although the patient reacts to ragweed and grass pollens and is probably clinically sensitive to both of these types of pollens, the history would indicate that another type of sensitivity is present. Seasonal rhinitis from the middle of July to the middle of August in the territory under discussion would be difficult to explain on the basis of pollen allergy. The patient is probably sensitive to fungi in spite of the fact that tests to corn smut, yeast and alternaria were reported as negative. More thorough investigation for possible mold sensitization should be made. This should include scratch tests with a more inclusive list of fungi, such as alternaria, aspergillus, penicillium, hormodendrum, monilia, chaetomium, mucor, cephalosporium, fusarium and smut. If no reactions are obtained, intradermal tests with the same fungi should be tried.

There are no contraindications for desensitization in an arrested case of pulmonary tuberculosis. As a matter of fact many phthisiologists and allergists are of the conviction that active symptoms of hay fever and asthma may activate a tuberculosis and therefore anything that can be done to minimize these allergic symptoms may be of appreciable benefit to the patient.

It is not advisable to mix the grass pollens with the ragweed pollens, chiefly for the reason that the difference in the seasons will necessitate a differing progression of doses for the two types of pollen. It is best to have the grass pollens in one mixture and the ragweed pollens in another. The two injections may be given at the same visit, one in the right arm and the other in the left. The average patient may begin with 0.05 cc. of 1:10,000 of these pollen extracts.

Of course, it is important to avoid systemic reactions in every patient but perhaps more so in this particular type of patient. This is best done by attention to the local reactions from the preceding doses, by the gradual and easy stages of progression of doses and by care used in ascertaining that the needle is not in a blood vessel.

INDIAN OR KARAYA GUM

To the Editor:—Please give me any available information on the use of Indian gum (Karaya gum), in foodstuffs, toilet preparations and dental powders and pastes. I have found several patients sensitized to Indian gum. Most of them had violent perennial hay fever symptoms, the source of the Indian gum being wave sets. However, I understand that Indian gum is frequently used as a filler for ice creams and certain pies. One of my patients had a violent nasal reaction from swallowing a small amount of Indian gum. Consequently it can apparently cause trouble by being swallowed as well as by inhalation. In particular, I should like further information as to its presence in foodstuffs and also as to its presence in tooth powders and tooth pastes.

M.D., Ohio.

ANSWER.—Manufacturers are permitted to use such vegetable gums, if of suitable purity, as long as such use does not result in the concealment of damage or inferiority of the product, and provided their presence is conspicuously declared on the labels of foods in which they are not recognized ingredients. Karaya gum, depending on its source, may have either adhesive properties or a high hydrophilic property. Because of either of these characteristics, the gum has been used as a filler in the manufacture of ice cream and desserts. It is especially useful when there is need for preventing the product from losing its form as it melts. It has a further use in food products such as dessert powders and beverage bases, in which it is sometimes present in small amounts as an emulsifying agent. Its use as a mechanical laxative is increasing because of its low price and swelling properties.

It is a common ingredient of toilet preparations, denture adhesive powders and paste dentifrices. For the former it is

used principally in wave setting lotions because of its mucilaginous consistency. A case of alleged sensitivity to Karaya gum was reported by Samuel M. Feinberg in *THE JOURNAL*, Aug. 17, 1935, page 505. As a general rule, it does not occur in tooth powders. More often it occurs in tooth paste as a binding agent. It is being used for this purpose less frequently than formerly. Lactona Dentifrice, accepted by the Council on Dental Therapeutics of the American Dental Association, is the only one of the accepted dentifrices to contain it. There is not enough evidence at the present time to warrant the discontinuance of its use. Karaya gum is a common constituent of adhesive powders to hold dental plates. A report of the Council on Dental Therapeutics (*J. A. D. A.* 24:1383 [Aug.] 1937) indicates a connection with certain conditions such as tuberculosis, anemia and drowsiness, although the connection remains to be confirmed.

REMOVAL OF TEETH FOR PYORRHEA

To the Editor.—The question of the extraction of teeth because of pyorrhea has come up in the case of a young woman. I am unable to advise her because of the conflicting opinions of several dentists whom she has consulted about the matter. She is generally in good health except for a coxalgia, which is somewhat troublesome. The disorder at present is hardly severe enough to warrant the removal of her teeth, unless her present trouble might be considered the forerunner of a more severe type of arthritic disease. The first dentist whom she saw advised extraction of all the upper teeth and the fitting of a denture. He gave the following reasons for his advice: 1. That the treatment of pyorrhea is a protracted affair, with little if any promise of permanent cure, therefore making it more costly than a removable denture, which will be necessary sooner or later in any event. 2. That the depth of the pockets along the gum margin render it impossible really to get at all of the infection. 3. That to permit the diseased teeth to remain will result eventually in the eroding of the bony processes around the teeth, thus making the fitting of a removable denture more difficult later on. 4. That the teeth are cosmetically not good looking, because they are spaced far apart, are discolored and that for the latter reason a removable well fitted denture would be a distinct improvement cosmetically. 5. That there is a certain amount of danger in that these constitute foci of infection even though carefully looked after at regular intervals. Three other dentists insist that she should retain her own teeth as long as possible, that they can be successfully treated, and that there will be no danger of absorption of toxic or infective material if they are properly looked after. Since she has limited means, the financial part of the matter enters in. I have seen the x-ray films of the teeth, and the infective process extends half to three fourths of the way along all the roots of the upper teeth. Please give your opinion in this matter.

M.D., Minnesota.

ANSWER.—The first dental consultant gives five reasons for his opinion, which if correctly based on facts are sufficient to justify his advice. The other three consultants apparently give no reasons other than the statement that the teeth can be retained for a considerable period. This would seem to warrant acceptance of the first consultant's opinion. It is undoubtedly true that dentists often have been inclined to retain teeth as long as possible without sufficient consideration of more remote effects on the health and well-being of the patient. It is also true that physicians have been too ready to condemn teeth and advise extraction without sufficient consideration of the ultimate effect on the patient's denture and health.

More specifically, it is undoubtedly true that the treatment of such a condition would be protracted and, even if all the diseased tissue could be removed and the supporting tissue restored to a normal healthy condition, its maintenance would require eternal vigilance on the part of the patient and continued assistance on the part of a skillful dentist. The ultimate cost, therefore, would probably be greater than the placing of a denture. The depth of the pockets as indicated by the x-ray films undoubtedly makes it extremely difficult to remove all the infection and obtain restoration to normal in the supporting tissues. This is not, however, impossible. It is undoubtedly true that if the diseased condition of the teeth continues, or if it periodically recurs, there will be destruction of the alveolar bone that will make the placing of a satisfactory denture much more difficult. A complete cure will, of course, not improve the esthetic appearance and this may be sufficient reason alone to justify the removal of the teeth and their replacement by a denture. Undoubtedly there is "a certain amount of danger" to the patient's health and well-being if the infection and inflammation are not entirely cured and normal conditions maintained. Considerable emphasis should be placed on this. It is by no means certain, however, that the complete cure of the mouth will relieve the coxalgia. The pyorrhea may be related to this and may not be. In this connection it might be interesting to refer to the article by Dr. George H. Thiele on coccygodynia and pain in the superior gluteal region and down the back of the thigh (*THE JOURNAL*, Oct. 16, 1937, p. 1271).

IODIZED POPPYSEED OIL IN BRONCHIECTASIS

To the Editor.—1. What is the present status of lipiodol in the treatment of bronchiectasis? 2. How often is the treatment given? 3. How long does the lipiodol remain in the bronchioles before being absorbed? 4. Isn't there such a thing as a sensitivity to lipiodol, an allergy developed after a few injections? If so, what are the particular symptoms that manifest themselves?

M.D., Louisiana.

ANSWER.—1. During the last six years, much has been written regarding the therapeutic use of iodized oil in patients with bronchiectasis and asthma. The reports have varied from the remarkably optimistic view (Anderson, William: *New York State J. Med.* 36:1151 [Aug. 15] 1936) to complete denial of any value (Crip, L. H., and Hampsey, J. W.: *J. Allergy* 9:23 [Nov.] 1937). An excellent review of the literature is given in the paper by Crip and Hampsey. Included in their records is the result of a questionnaire forwarded to 335 selected specialists who are members of allergy societies, of the American Bronchoscopic Association and of the Triological Society. Of 230 members who replied, sixty-four had experience with this form of treatment. Only one third of these were still using it for the most part as an adjunct to medical management. Little enthusiasm was displayed for this procedure by most of those who were still using it. Crip and Hampsey report the results of treatment in forty cases, only four of which showed temporary improvement. They conclude that iodized oil is of questionable value for patients with asthma.

2. Treatment is usually given on one side at a time, usually once a week or less, often depending on the condition of the patient. As many as forty treatments were given in the series quoted.

3. The amount of material absorbed from the lungs is negligible. Most of it is coughed up and expectorated or swallowed. The material may remain in the lungs as long as three or four years.

4. Sensitivity to lipiodol is not likely to develop with repeated insufflations because of the negligible amount absorbed. If symptoms of hypersensitivity occur, they will be present after the first treatment. These may be of an allergic nature either to iodine or to poppyseed oil. They consist of fever, urticaria, arthritis, asthma and occasionally acute asphyxia. At least one fatal case of iododerma has been reported (Goldstein, D. W.: *Fatal Iododerma Following Injection of Iodized Oil for Pulmonary Diagnosis*, *THE JOURNAL*, May 9, 1936, p. 1659). Other untoward reactions reported are exhaustion from convulsive coughing, acute collapse of the lung, lipid or infectious pneumonia, traumatic bronchiectasis because of rupture of the terminal bronchioles from coughing, and pulmonary fibrosis and circulatory failure. The danger from the use of iodized oil in some patients with pulmonary tuberculosis has been indicated in a report by the Council on Pharmacy and Chemistry (*Dangers of the Injection of Iodized Oils*, *THE JOURNAL*, Dec. 3, 1932, p. 1946).

TREATMENT OF ECLAMPSIA

To the Editor.—What are the relative values of 50 per cent dextrose and magnesium sulfate solutions intravenously in eclampsia coming on three hours after delivery? Will you give me a brief outline of treatment for eclamptic convulsions in a patient never seen until in labor, with blood pressure 150 systolic, 92 diastolic, and slight edema of the ankles, convulsions occurring three hours after delivery?

M.D., Pennsylvania.

ANSWER.—While both dextrose and magnesium sulfate are administered in cases of eclampsia for the control of convulsions, the reasons for their use are not the same. Dextrose is given on the ground that there is a glycogen deficiency in women who have toxemias of pregnancy. Paul Titus believes that an insufficient carbohydrate intake in the maternal diet plus the sudden and extraordinary demands of fetal and placental growth and uterine hypertrophy bring about a glycogen deficiency in the body tissues, especially noticeable in the liver. The administration of dextrose in various concentrations is of distinct benefit in cases of preeclampsia and eclampsia.

Magnesium sulfate is given to patients with eclampsia on the ground that it controls convulsions, reduces edema and promotes diuresis, thereby eliminating the "toxins" of the toxemias. Many reports have appeared praising magnesium sulfate in the treatment of eclampsia. One of the most recent ones is by Stroganoff (*J. Obst. & Gynec. Brit. Emp.* 44:289 [April] 1937), who has done much to popularize the conservative treatment of eclampsia.

The treatment of postpartum eclampsia is as follows: The patient should be placed in a quiet and darkened room preferably in a hospital. A nurse or other attendant should be present constantly to see that the patient does not injure herself either

by biting her tongue, falling out of bed, aspirating vomitus or sometimes drowning from excessive pulmonary secretions. A clothespin covered with cloth will serve admirably as a mouth gag and should be placed near the patient's head. A tracheal catheter should also be close by so that mucus may be aspirated when necessary. The blood pressure should be recorded every hour and the pulse and respiratory rate counted at frequent intervals until improvement is observed. It is also important to measure the output of urine; this is best accomplished by keeping a catheter in the bladder.

As Dieckmann suggests (*Am. J. Obst. & Gynec.* 33:165 [Jan.] 1937), to control the convulsions it is best to use a combination of drugs at the same time because it might be dangerous to give enough of one drug at a time. One-fourth grain (0.016 Gm.) of morphine is given as soon after the first convulsion as possible. This is repeated every hour until the convulsions are controlled or until the respirations drop to ten per minute. In addition, 10 cc. of a 25 per cent solution of magnesium sulfate is given intramuscularly and 5 cc. of this solution is given after each convulsion or until 30 cc. has been administered. Another useful drug is soluble phenobarbital, of which 0.3 Gm. (5 grains) should be injected subcutaneously and repeated if necessary in twelve or twenty-four hours. Still another drug which has proved helpful is chloral hydrate. Two Gm. (30 grains) is given in 100 cc. of starch water (one tablespoonful of starch to 100 cc.) by rectum and repeated as necessary.

It is important to keep the lower bowel empty and this must usually be accomplished by means of enemas. If there is oliguria, anuria, coma, tachycardia or fever, hypertonic dextrose solutions should be administered intravenously. Every six to eight hours between 500 and 1,000 cc. of a 20 per cent solution should be given, each injection lasting from thirty to forty-five minutes. Sufficient dextrose solution should be given to insure a urinary output of at least 30 cc. per hour and this should be continued until normal diuresis begins. If 20 per cent dextrose does not produce diuresis, a 30 per cent solution should be used.

As soon as the patient becomes conscious enough to take and retain nourishment she should be given water, fruit juices and fruit. As improvement continues a more and more liberal diet is added.

RULES GOVERNING DISCLOSURE OF MEDICAL EXAMINATION TO INDUSTRIAL FIRMS

To the Editor.—What is the legal status regarding physical examinations which are made for industries and for employment application records? At the present time there appears to be a move on foot whereby various industries are requesting applicants for employment to have physical examination and complete health records. These records of the examinations made as well as of the history obtained is to be in duplicate, one of the records to be furnished to the industry in question. Some of these examinations are quite extensive. I have been wondering whether or not there might be a breach of professional secrecy as well as legal liability for the physician who enters into this sort of thing and furnishes all this information to the various firms in question. I should like to have an opinion on this point.

M.D., Pennsylvania.

ANSWER.—When a law undertakes to require a physician to report to a public officer or to an employer the results of examinations of employees who have been injured or who have contracted disease in the course of employment, the legal obligation to make the report carries with it the right to do so. To the extent to which the obligation to make such a report is modified by the circumstances incidental to the injury or disease, the right of the physician to make the report varies accordingly.

Aside from any legal obligation to make a report, with a correlative right to do so, the right of a physician to report to an employer the results of an examination of an employee or of an applicant for employment varies with the circumstances under which the examination is made.

If the examining physician is in the service of the employer and if the employee or applicant knows that fact, knows the purpose of the examination and knows that a report of the results of the examination will be submitted to the employer in the ordinary course of business unless timely objection is made, and if the employee or applicant nevertheless permits the examination to be made, the consent of the employee or applicant to the proposed report to the employer would doubtless be implied in the absence of an express understanding to the contrary.

If the physician is not in the service of the employer but is one selected by the employer or the applicant, no presumption of right on the part of the examining physician to disclose the results of the examination to the employer would be implied. Before making an examination under such circumstances, the examining physician should have a clear understanding with the applicant as to the nature and purpose of the examination

and as to the extent, if any, to which the examining physician is authorized by the examinee to disclose the results. If the examinee authorizes the physician to report to the employer the results of the examination, whether favorable or unfavorable to the examinee, the examinee should give written consent to the disclosure. No particular form of consent is necessary; the consent need be only such as indicates clearly an understanding on the part of the examinee and indicates his consent. Legally it is not necessary that the consent be in writing, but written consent will facilitate proof of the examining physician's right to make the disclosure, if any question arises later.

The safest and in some ways the most convenient procedure in all such cases is for the examining physician to give his report to the examinee himself or, if the examinee is a minor, to his parent or guardian, leaving it to the judgment of the examinee or his parent or guardian to submit the report to the employer or to refrain from doing so.

In any case in which a physician makes a report showing the results of his examination of any examinee, he should keep a copy of that report for future reference.

HONEY AND BEE VENOM IN ALLERGY

To the Editor.—Recently I have been approached concerning the value of honey for the relief of hay fever and other allergic conditions, especially those due to pollens. There have been short comments on its value in lay publications. Apparently only the honeycomb is of value. Is there any explanation for the mode of action, if any? What does the comb wax contain or hold in physical bond that could be of benefit? I understand that there is considerable formic acid in the finished comb and some in the honey itself. Would this acid be a factor? Is there anything in bee venom of value? STEWART R. JONES, M.D., Suttons Day, Mich.

ANSWER.—An analysis of American honey made by Browne of the U. S. Department of Agriculture showed that on the average it contained water 17.7 per cent, levulose 40.5 per cent, dextrose 34.02 per cent, sucrose 1.8 per cent, dextrans and gums 1.51 per cent, and ash (varying greatly from different sources) 0.15 per cent. Honey also contains several materials which vary greatly or are difficult to determine quantitatively, such as pollen grains, beeswax and some albuminoids which come either from pollen or from the honey itself. Free acid also is present and chemists have always considered it to be formic acid; but Browne states that it is largely malic acid, as the poison glands of bees do not produce formic acid. Various coloring materials of plant origin and enzymes also are found in honey.

A research of the literature shows no scientific study wherein the use of honey favorably influenced hay fever. On the other hand there are several notes of unfavorable effects. For example, Duke (Asthma, Hay Fever, Urticaria and Allied Manifestations of Allergy, St. Louis, C. V. Mosby Company, 1925, p. 215) states that patients sensitive to buckwheat may react to traces of buckwheat sometimes found in honey. Hansel (Allergy of the Nose and Paranasal Sinuses, St. Louis, C. V. Mosby Company, 1936, p. 343) states that patients with hay fever may be unable to tolerate honey because it frequently contains a great variety of pollens. Duke (*Arch. Int. Med.* 28:151 [Aug.] 1921) reported gastrointestinal allergy after the eating of honey. Walker (*J. M. Res.* 36:423 [July] 1917) reported asthma from honey, and Menagh (*THE JOURNAL*, March 3, 1928, p. 668) urticaria from the same source. Makai (*Deutsche med. Wchschr.* 48:257 [Feb. 23] 1922) fed honey to children who were receiving injections of horse serum and most had severe respiratory or gastrointestinal symptoms; control cases in which horse serum was not administered did not show effects from the honey.

Several articles on bee venom are in the literature. Haag and König (*Klin. Wchschr.* 15:1321 [Sept. 12] 1936) treated fifteen hay fever patients with injections of bee venom with good results in fourteen, eight of whom had no symptoms whatever. The injections were given subcutaneously, twice weekly, beginning with small doses with gradual increase. The treatments were given during the hay fever season and there were no reactions. Wolpe (*Wien. klin. Wchschr.* 50:1234 [Sept. 3] 1937; abstr. *THE JOURNAL* Oct. 23, 1937, p. 1409) gave injections of bee venom to a patient who had severe generalized urticaria after a bee sting; for five years no further attacks of urticaria occurred in this patient. An additional twenty-five patients with urticaria were treated with bee venom and fifteen were completely relieved and six others improved. He also treated six cases of angioneurotic edema (Quincke's disease) with bee venom with complete success. With the exception of the first patient, he does not state how long these patients remained well.

Tetsch and Wolff (Berlin letter, *THE JOURNAL*, Oct. 2, 1937, p. 1138) experimented with venoms and concluded that the active

substances are protein and that the composition of bee venom is similar to that of cobra and crotoalin venoms. Essex, Markowitz and Mann (*Am. J. Physiol.* 94:209 [July] 1930) experimented on dogs and concluded that bee venom has a physiologic action similar to that of histamine. This work agrees with that of Benson and Semenov (*J. Allergy* 1:105 [Jan.] 1930), who also showed that bee venom and histamine act similarly; they also demonstrated that allergy to bee stings is entirely comparable to allergy from other protein substances. The authors state that formic acid has never been demonstrated in bee venom, that Langer attributes the poisonous action of venom to a non-volatile, protein-free organic base, that Arthus and Lyssy believe that bee venom is a proteotoxin and that Flury concludes that Langer's protein-free constituent is not a simple base but a complex one, from which Flury isolated (1) an indole derivative, probably tryptophan, (2) cholin, (3) glycerin, (4) phosphoric acid, (5) palmitic and other fatty acids, and (6) a non-nitrogenous constituent having a saponin-like action. This last derivative contains the pharmacologically active principle of bee venom.

POSSIBLE ALLERGY TO HEAT

To the Editor:—A married woman, aged 25, has been under my observation for the past year because of intense itching of the skin of the whole body. The attacks are precipitated by an unusual amount of exercise, such as sweeping, washing clothes or running short distances. Excitement or higher temperatures of the air have the same result. She describes it as coming on whenever "her blood heats up." Relief can be obtained only by lying or sitting down and resting for a variable period. During an attack the skin is flushed and shows minute red spots of a darker color than the rest of the skin. There is no resemblance to an ordinary urticarial lesion. The spots fade rapidly with rest and leave no residue. Her past history is negative except for a normal pregnancy in 1930 and the family history is negative for allergy. She is perfectly normal and well developed and is in exceptionally good condition. She takes no medicine of any kind and the diet is well balanced and adequate. There is no complaint with regard to the gastro-intestinal tract except a very occasional mild attack of indigestion quickly relieved by alkalis. I have given her cutaneous tests for a large number of the common offenders in allergic disease with no positive results and have found that a change of environment has no effect. Sedatives had no result except that drug rash developed after the administration of phenobarbital. I would appreciate your comments and suggestions.

CHARLES A. ROSE, M.D., Almond, N. Y.

ANSWER:—Organic disease such as diabetes mellitus should be ruled out first. She should have a blood sugar estimation as well as urine examination. If organic disease can be excluded, the diagnosis of physical allergy (to heat) seems most likely. This could probably be confirmed by exposure of the patient to heat (hot bath, infra-red lamp, and so on). If pruritus follows, heat sensitivity is likely.

If heat seems to be the main factor, desensitization to heat should be tried. This can usually be done by gradually increasing the temperature of baths, beginning with tepid and progressing to hot baths, lasting perhaps twenty minutes, if the patient can tolerate this. Great care should be exercised not to increase the heat too rapidly. Other ways of application of heat can be tried instead of the baths, if desired, e. g., by increasing exposure to infra-red lamps.

ARTIFICIAL INSEMINATION

To the Editor:—Is artificial insemination considered practical in cases in which the husband has been found sterile? It would seem that desirable donors would be hard to find. Is there a reliable clinic or hospital which specializes in this work?

M.D., Missouri.

ANSWER:—Artificial insemination is an unpractical and dangerous procedure. Aside from the possibility of legal involvement as well as the possibility of blackmail there must not only be considered the possibility of gonorrhea (latent) and syphilis in the donor but also one must know definitely the entire family history of the donor as well as of his antecedents. Otherwise a tendency to insanity, epilepsy and other traits may be inherited by the offspring. Of course, tuberculosis must be excluded in the donor.

One must also take into consideration the diagnosis of sterility in the male. Most of the conditions causing absence of spermatozoa in a condom specimen can be relieved by either endocrine treatment or operation in case the tubes are occluded. The main factor is the diagnosis of the underlying condition.

Another factor to be taken into consideration is that artificial insemination whether from a stranger or from the husband himself is a serious procedure and not without considerable risk. There is no practical method of sterilizing the semen without killing the spermatozoa. Normally the genital secretions of the female seem to have the power to allow the spermatozoa to proceed upward and at the same time of keeping back bacteria from infecting the uterus and parts beyond. This must

be the case; otherwise infection would be frequent when it is considered that the act of intercourse is often undertaken without any aseptic precautions or even ordinary cleanliness. This preventive power of the genital secretions of the female is done away with in artificial insemination.

PAINFUL PARALYSIS AFTER ANTIRABIC TREATMENTS

To the Editor:—A white man, aged 43, 5 feet 10 inches (178 cm.) tall, weighing about 170 pounds (77 Kg.), took the antirabic treatment recommended by the North Carolina State Board of Health, consisting of twenty-one injections into the anterior abdominal wall. During the last seven injections he noticed a generalized paralysis of his extremities (not complete). This gave rise to severe pain in his extremities, so that he was confined to bed for six weeks. The pain has somewhat abated and the extremities regained some of their muscular activity. He has been treated by numerous physicians and has been given fever therapy and salicylates for the last three years. At present he complains of weakness, more severe in his left arm and leg, and of pain in all his muscles. The blood pressure is 120 systolic, 80 diastolic; and the blood count is normal. The urine is normal. The reflexes are normal on the right and hyperactive on the left. Please suggest treatment.

W. R. BEACH, M.D., Westfield, N. C.

ANSWER:—It is impossible to localize the process from the data submitted. No mention is made of any sensory abnormality or cranial nerve defect. One can guess that because of the pain and the generalized paresis of the extremities the case originally was a meningomyelitis with radicular involvement occurring with the fourteenth injection of antirabic material. It is not stated whether the substance used was vaccine; dead cord or other. Usually the patients who develop this unfortunate complication either die from two to three weeks after the onset of the cerebrospinal lesion or make an almost complete recovery within a year. If there is any improvement taking place, regardless of how little, the suggestion is made that watchful waiting and symptomatic supervision be the keynote of any treatment. If the pain is disturbing, one can consider either a chordotomy or section of a sufficient number of posterior roots to the affected extremity. Potassium iodide in the form of a saturated solution given in doses of 15 drops three times daily is suggested for trial. Large continued doses of vitamins B₁ and B₂ should be prescribed.

SODIUM HEXAMETAPHOSPHATE IN HYPERHIDROSIS AND SKIN DISEASES

To the Editor:—Please advise me as to the use of sodium hexametaphosphate in excessive sweating and certain skin conditions. Also tell me the strength preparation that is used and other details that might be useful.

M.D., Wisconsin.

ANSWER:—Sodium hexametaphosphate is a water softener yielding a slightly acid solution and possessing a strong buffer action. Applied to the skin, it tends to lessen perspiration and sebaceous secretion, drying the skin and counteracting the irritating effects of alkalis and oils (Jones, K. K.; Murray D. E., and Ivy, A. C.: Sodium Hexametaphosphate: Its Use for Certain Occupational Dermatoses, *Industrial Med.* 6:459 [Aug.] 1937).

For hyperhidrosis of the feet, washing with tincture of green soap was followed by rinsing in a 1 or 2 per cent solution of sodium hexametaphosphate in water, and a thin film of the powdered drug was dusted into the shoes each morning. Cotton socks were worn, changed daily. Prompt control of the sweating was the result, maintained as long as the use of the drug was continued.

For dermatitis from soap, a 1 per cent solution of sodium hexametaphosphate was used for washing, no soap being allowed. The patients were instructed to sponge with the sodium hexametaphosphate solution four times a day, in the morning, at noon, on ceasing work and before retiring. In spite of continuing their work in a soap factory, they showed improvement in a few days and the irritation, which had been present for from one to five months, had disappeared in a few weeks. As long as the treatment was continued, these patients had no recurrence of the dermatitis; but when the use of the hexametaphosphate was given up, the dermatitis returned. There was no bad effect on the skin except increased dryness.

For oil acne and oil dermatitis the drug also was effective, the redness and itching clearing up first, the acne yielding more slowly. As a prophylactic, sodium hexametaphosphate was effective.

For ringworm dermatitis of the feet, sodium hexametaphosphate was useful in relieving the itching and drying the skin but was not able to cure any but the mildest cases.

The conclusions of these authors were as follows: "1. Sodium hexametaphosphate acts on the skin to form a protective coat-

ing, acid in nature, that inhibits the action of alkali on the skin. 2. Sodium hexametaphosphate, either as a dry powder or as a solution, will reduce the excretion of invisible perspiration by 50 per cent. 3. The protective film of sodium hexametaphosphate on the skin removes the irritation of soap and oil and acts as a prophylactic and cure for this condition. 4. The protective film formed by the hexametaphosphate is useful in the treatment of patients having hyperhidrosis and trichophytid infestations." The last statement can be criticized. The word trichophytid was probably a misprint. Trichophyton was meant, no doubt.

Recently Dr. Jones reported that for hyperhidrosis stronger solutions, 25 or even 50 per cent, can be used without skin irritation, and with effect in resistant cases.

BILATERAL SCIATICA

To the Editor.—A patient worked for several years on a delivery truck, delivering bags of feed and barrels weighing from 100 to 400 pounds. About a year or eighteen months ago he developed a sciatic neuritis, first in one leg, then later in both legs, which became so severe that he was forced to stop his work and receive medication. He improved and was free from pain, but when he tries to do some work his pains return. The man's physical condition is perfect otherwise, the Wassermann reaction is negative, and the urine, blood and spine are normal. He is bringing suit for compensation. I was his physician. Was this condition caused by a continuous injury due to heavy lifting and striving?

M.D., New Jersey.

ANSWER.—This patient should have the advantage of orthopedic and neurologic consultation. Pain of this type, double sciatica, might be due to an arthritis of the spine or it might be due to some intraspinal lesion such as a cord tumor or a slipped intervertebral disk. Examination of the cerebrospinal fluid should be made to ascertain whether there is an excess of protein and, if so, an injection of iodized poppy-seed oil solution into the spinal canal would be justified to determine whether a filling defect would show in the roentgenogram. The accuracy of this method of diagnosis is remarkably high. If there is a defect present an exploration of the spinal cord would be indicated.

It would be difficult to connect this man's condition definitely with his occupation although it is reasonable to presume that it was at least a contributing factor.

BURNING TONGUE

To the Editor.—What is the cause and treatment for a burning sensation on the anterior third of the tongue, bilateral? There is nothing abnormal about the tongue and no dental disorder. All clinical tests are negative; blood pressure is normal. There are no eye or ear complaints and no other objective or subjective signs.

GEORGE H. JANTZEN, M.D., Long Island, N. Y.

ANSWER.—The sensory innervation of the anterior two thirds of the tongue is by way of the fifth nerves (trigeminal). The taste component for this area goes through the lingual branches to the chorda tympani connection between the fifth and the seventh nerves (facial) and thence to a common taste center.

The burning sensation (glossodynia) described is rare but distressing. It can have several possible causes but most typically is found in women beyond the age of 50 who have a low pain threshold, often associated with cancerphobia or other complaints of a functional order. It has also been ascribed to dyspepsia, gouty diathesis, faulty diet, nervous tension, and as reflex from regional infections such as a dental abscess. If it has an inflammatory local cause (rough teeth, dentures which are porous or chemically irritating) or a systemic cause (early pellagra, pernicious anemia) the local change should be obvious. An abnormal condition of gastric acidity, either hypo-acidity or hyperacidity, has been blamed for the sensation. A nerve tract involvement might be present but it is usually unilateral. A chronic lingual tonsillitis may be diagnosed by cocaineization of the nasal, sphenopalatine or Meckel's ganglion.

Recently two other causes have been described: About 10 per cent of a series of patients who had signs and symptoms from destruction and disturbed function of the temporomandibular joint had burning or prickling pain along the dorsal margin of the tongue produced reflexly by pressure of the condyle on the auriculotemporal nerve. Relief was often obtained by repositioning the lower jaw. The second cause is the electric current which is produced by the presence in fillings or dentures of metals of unlike potential. The associated symptoms and signs can include a metallic taste, acute dental nerve sensations and actual inflammation.

Since the burning in this case is bilateral, anterior, persistent and independent of a demonstrable pathologic condition, it could be psychogenic, reflex or due to a local diffuse cause. If, after

reviewing the suggested causes and testing the gastric acidity, the taste sensation of the entire tongue, and so on, there then seems to be no correlation, one could tentatively treat with psychotherapy while observing further. Hydrochloric acid or alkalis, electrical stimulation, amniotin, attempts to improve the general health and reduce the strain, and reassurance have all been used empirically but the success has been only partial.

DESENSITIZATION TO HOUSE DUST

To the Editor.—I have under my care a woman who is sensitive, among other things, to house dust. Is it possible to desensitize the patient with a preparation of her own house dust?

M.D., Ind.

ANSWER.—It is not only possible but highly desirable to treat such a patient with house dust extract. The dust is collected from the home, preferably with a vacuum cleaner. If one is to obtain a potent preparation, great care must be taken to collect the dust from mattresses, pillows and furniture. This is accomplished by using an attachment on the vacuum cleaner. Usually an insufficient amount of dust is collected in this manner. It is therefore frequently necessary to add to that dust the dust obtained by sweeping the carpet.

To 20 Gm. of such dust, ether is added and allowed to stand for a few hours. The ether is then removed and the dust subjected to another extraction with ether. After the second quantity of ether is drained off the dust is thoroughly dried and extracted with 100 cc. of Coca's solution for twenty-four hours. It is filtered through filter paper and finally through a Seitz filter. It is then tested for sterility.

Usually after several injections, beginning with small amounts of this extract, the patient shows clinical improvement. A sufficient degree of desensitization can be accomplished with good clinical results but it is doubtful whether complete desensitization can ever be obtained.

PAIN IN AURICULAR NERVE

To the Editor.—A woman, aged 37, complains of a sharp stabbing pain, intermittent in timing and lasting from a minute to a minute and a half, with a total duration of from a few minutes to two or three hours. This pain has existed three years and starts about 2 cm. above and 2 cm. to the right of the suprasternal notch. It radiates over the distribution of the superficial cervical nerve and then up the great auricular nerve in front and superior to the ear. There are no areas of hyperesthesia or areas that would serve as trigger zones. The only thing that she has taken for relief is acetylsalicylic acid repeated every three hours for three or four doses. This gave very little relief and the pain gradually subsided. Physical examination and roentgenograms are negative. I would like some suggestion on diagnosis and treatment.

M.D., Idaho.

ANSWER.—Judging from the history of the location and nature of the pain, the patient may have arthritis involving the upper cervical region of the spine, as the great auricular nerve is a branch of the upper cervical nerve. In the way of treatment, an extension of the spine might be tried, which sometimes relieves pain, and light therapy would be helpful applied to the upper cervical region of the spine. There are no objections to her continuing the acetylsalicylic acid. Sometimes an alcohol injection of the nerve, if properly done, will give relief.

ORALSULIN

To the Editor.—Has "Oralsulin," used as an insulin given by mouth and sold by the Lafayette Chemical Company, Indiana, any value in diabetes mellitus?

M.D., Michigan.

ANSWER.—No oral insulin of Lafayette Pharmacal, Inc., has been accepted by the Council on Pharmacy and Chemistry, nor has Lafayette Pharmacal, Inc., requested consideration of the product by the Council.

Over eleven years ago, THE JOURNAL in discussing "Enterocap Oralsulin" (Dec. 4, 1926, p. 1935), pointed out the lack of evidence for the efficiency of orally administered preparations of insulin and pancreas. In a concluding paragraph appeared the following statements:

"In commenting editorially on the administration of insulin, THE JOURNAL as long ago as 1923 called attention to the desirability of giving wide publicity to the current limitations of this most promising therapy, since many 'just-as-good' pancreatic and antidiabetic preparations for oral use were already being put on the market. This warning is still in order, for there is yet no convincing evidence to show that any preparation taken by mouth is an effective means of producing the characteristic action of insulin."

No new evidence has been found to necessitate a revision of the statement published at that time. Recently the federal authorities charged with the enforcement of the Food and Drugs Act seized a shipment of Enterocap Oralsulin and declared the

product adulterated and misbranded. According to the government report, examination showed that the preparation contained no insulin and that the labeling bore false and fraudulent representations regarding the curative or therapeutic effects of the product (Notice of Judgment 27373, Food and Drug Administration, U. S. Department of Agriculture, issued December 1937). No products of Lafayette Pharmacal, Inc., stand accepted by the Council on Pharmacy and Chemistry.

PECTIN IN OSTEOMYELITIS

To the Editor:—Please give me information on the use of fruit pectin in the treatment of osteomyelitis. E. M. GULLATT, M.D., Ada, Okla.

ANSWER.—A report on the bactericidal action of pectin was published by Haynes, Tompkins, Washburn and Winters in the *Proceedings of the Society for Experimental Biology and Medicine* 36:389 (June) 1937. Comment regarding this preliminary report appeared in *THE JOURNAL*, Oct. 14, 1937, page 1283. The report stated that 2 per cent commercial pectin added to heart-infusion broth would kill *Escherichia coli* within twenty-four hours, while control cultures adjusted to the same pH showed a thousandfold increase in bacterial count. It should be emphasized, however, that this in vitro bactericidal property is dependent on the acidity of the pectin broth mixture and is not apparent in neutral or alkaline mediums. The report also describes the successful results of the treatment of open wounds with pectin solution. It is too early, however, to evaluate this work, which has not yet been confirmed by other investigators.

SEA TANGLE TENTS

To the Editor:—I am enclosing a box cover and two so-called sea tangle tents, which were purchased at a local drug store on the recommendation of a midwife, to be used in the performance of an abortion by her. The midwife is now under arrest and the local authorities have asked me to write you to find out whether or not there is any legitimate use of these tents at any time. M.D., Pennsylvania.

ANSWER.—As far as is known not a single American obstetrician of good repute uses tents in his practice at the present time. Many years ago, however, tents were occasionally used to produce softening and dilatation of the cervix in cases of therapeutic abortion. Today no mention is made of tents in any American textbook on obstetrics or in medical literature. However, British obstetricians recommend tents for terminating pregnancy. In the Queen Charlotte's Textbook of Obstetrics, edition 4, page 478, appears the following statement. "The simplest method of terminating pregnancy, during the first twelve weeks, is by inserting a laminaria or sea-tangle tent into the cervical canal. Tents are sterilized by immersion in absolute alcohol for at least forty-eight hours. . . . Tents act by absorbing water, which causes them to swell considerably. . . . Sepsis is a danger."

INTRASPINAL INJECTION OF SOLUTION OF VITAMIN B₁ HYDROCHLORIDE FOR MULTIPLE SCLEROSIS

To the Editor:—A patient with multiple sclerosis for about fifteen years has received treatment in various hospitals and clinics without benefit. This patient has recently become interested in newspaper reports of the work of Dr. Elias Stern of New York on the use of vitamin B₁ in multiple sclerosis. I have been unable to obtain any authentic information on this work and would appreciate learning whether it is of real value in multiple sclerosis and, if so, the plan of treatment.

M.D., Pennsylvania.

ANSWER.—There is no convincing evidence that the injection of thiamin chloride directly into the spinal canal is of any more value in multiple sclerosis than the injection of thiamin chloride into the blood stream or indeed intramuscularly. On the other hand, it is certain that intraspinal injection of thiamin chloride is not without danger, and there is knowledge of at least one fatal result from this treatment.

CAR SICKNESS IN CHILDREN

To the Editor:—Please offer suggestions as to the treatment of car sickness in children. M.D., Minnesota.

ANSWER.—Car sickness is similar to sea sickness but is caused by the motion of a land-propelled vehicle. If the child were not taken in moving vehicles, the condition would not occur. When it is necessary to transport a child who suffers from car sickness, it might be helpful to administer a sedative such as one of the bromides in a small dose, in an attempt to mitigate the condition. Both car and sea sickness are probably types of vertigo of vestibular origin.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 28. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ALASKA: Juneau, Sept. 6. Sec., Dr. W. W. Council, Box 561, Juneau.

ARIZONA: *Basic Science*. Tucson, June 21. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson. *Medical*. Phoenix, July 5-6. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

ARKANSAS: *Basic Science*. Little Rock, June 4. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock. *Medical (Regular)*. Little Rock, June 9-10 and Nov. 3-4. Sec., State Medical Board of the Arkansas Medical Society, Dr. L. J. Kosminsky, Texarkana. *Medical (Eclectic)*. Little Rock, June 21. Sec., Dr. Clarence H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Reciprocity*. Los Angeles, July 11, San Francisco, Sept. 14, and Los Angeles, Nov. 16. *Written examinations*. San Francisco, June 27-30, Los Angeles, July 11-14, and Sacramento, Oct. 17-20. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: *Basic Science*. Denver, June 8-9. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver. *Medical*. Denver, July 6-8. Sec., Dr. Harvey W. Snyder, 831 Republic Bldg., Denver.

CONNECTICUT: *Basic Science*. New Haven, June 11. *Prerequisite to license examination*. Address State Board of Healing Arts, 1895 Yale Station, New Haven. *Medical (Regular)*. Hartford, July 12-13. *Endorsement*. Hartford, July 26. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Medical (Homoeopathic)*. Derby, July 12. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DELAWARE: Dover, July 12-14. *Reciprocity*. Dover, July 19. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: *Basic Science*. Washington, June 27-28. *Medical*. Washington, July 11-12. Asst. Sec., Commission on Licensure, Mr. Paul Foley, 203 District Bldg., Washington.

FLORIDA: Jacksonville, June 13-14. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, June. Joint Sec., State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDAHO: Boise, Oct. 4-5. Commissioner of Law Enforcement, Hon. J. L. Balderston, 205 State House, Boise.

ILLINOIS: Chicago, June 28-July 1, and Oct. 18-20. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

INDIANA: Indianapolis, June 21-23. Sec., Board of Medical Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

IOWA: *Medical*. Iowa City, June 7-9. *Basic Science*. Des Moines, July 12. Dir., Division of Licensure and Registration, Mr. H. W. Greffe, Capitol Bldg., Des Moines.

KANSAS: Kansas City, June 7-8. Sec., Board of Medical Registration and Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

KENTUCKY: Louisville, June 8-10. Sec., State Board of Health, Dr. A. T. McCormack, 620 S. 3rd St., Louisville.

LOUISIANA: New Orleans, June 2-4. Sec., Dr. Roy B. Harrison, 1507 Hibernia Bank Bldg., New Orleans.

MAINE: Augusta, July 5-6. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Medical (Regular)*. Baltimore, June 21-24. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. *Medical (Homoeopathic)*. Baltimore, June 21-22. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, July 12-14. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.

MICHIGAN: Ann Arbor and Detroit, June 13-15. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: *Basic Science*. Minneapolis, June 7-8. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical*. Minneapolis, June 21-23. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MISSISSIPPI: Jackson, June 22-23. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MISSOURI: St. Louis, June 2-4. Director, Medical Licensure, Dr. H. S. Gove, State Capitol Bldg., Jefferson City.

MONTANA: Helena, Oct. 4. Sec., Dr. S. A. Cooney, 216 Power Block, Helena.

NEBRASKA: Omaha, June 8-9. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEW JERSEY: Trenton, June 21-22. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 10-11. Sec., Dr. Le Grand Ward, 135 Palace Ave., Santa Fe.

NEW YORK: Albany, Buffalo, New York, and Syracuse, June 27-30 and Sept. 19-22. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

NORTH CAROLINA: Raleigh, June 13. Sec., Dr. B. J. Lawrence, 503 Professional Bldg., Raleigh.

NORTH DAKOTA: Grand Forks, July 5-8. Sec., Dr. G. M. Williamson, 4½ S. 3rd St., Grand Forks.

OHIO: Columbus, May 31-June 3. Sec., State Medical Board, Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: Oklahoma City, June 8-9. Sec., Dr. James D. Osborn, Jr., Frederick.

OREGON: *Medical*. Portland, June 21-23. Sec., Dr. Joseph F. Wood, 509 Selling Bldg., Portland. *Basic Science*. Corvallis, July 16 and Portland, Nov. 19. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

PENNSYLVANIA: Philadelphia and Pittsburgh, July 5-9. Sec., Board of Medical Education and Licensure, Dr. James A. Newpher, 400 Education Bldg., Harrisburg.

RHODE ISLAND: Providence, July 7-8. Chief, Division of Examiners, Mr. Robert D. Wholey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: Columbia, June 28. Sec., Dr. A. Earle Booser, 505 Saluda Ave., Columbia.

SOUTH DAKOTA: Rapid City, July 19-20. Director of Medical Licensure, Dr. B. A. Dyar, State Board of Health, Pierre.
TENNESSEE: Knoxville, Memphis, and Nashville, June 15-16. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.
TEXAS: San Antonio, June 20-22. Sec., Dr. T. J. Crowe, 918 Mercantile Bldg., Dallas.
VERMONT: Burlington, June 15-17. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.
VIRGINIA: Richmond, June 22-24. Sec., Dr. J. W. Preston, 30½ Franklin Road, Roanoke.
WEST VIRGINIA: Elkins, July 4-6. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.
WISCONSIN: *Basic Science.* Milwaukee, June 4. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical.* Milwaukee, June 28-July 1. *Applications must be completed and on file by June 10.* Sec., Dr. Henry J. Gramling, 2203 S. Layton Blvd., Milwaukee.
WYOMING: Cheyenne, June 2. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

NATIONAL BOARD OF MEDICAL EXAMINERS
SPECIAL BOARDS

Examinations of the *National Board of Medical Examiners and Special Boards* were published in *THE JOURNAL*, May 21, page 1776.

Washington January Examination

Mr. Dave S. Cohn, secretary, Department of Licenses, reports the examination held by the Washington State Medical Board at Seattle, Jan. 19, 1938. The examination covered 7 subjects and included 70 questions. Thirteen candidates were examined, all of whom passed. Thirteen physicians were licensed by reciprocity and four physicians were licensed by endorsement after an oral examination. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Northwestern University Medical School.....	(1935)	85.7, (1937)	87.1
Harvard University Medical School.....	(1935)	83.2, (1936)	86.2*
University of Minnesota Medical School.....	(1937)		80.8*
Creighton University School of Medicine.....	(1936)		79*
University of Nebraska College of Medicine.....	(1937)		81.1*
Cornell University Medical College.....	(1937)		83.1*
University of Oklahoma School of Medicine.....	(1937)		81.7*
University of Oregon Medical School.....	(1936)	85,* 87.7* (1937)	83.7*
University of Manitoba Faculty of Medicine.....	(1935)		85.4
School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Colorado School of Medicine.....	(1935)		Colorado
University of Illinois College of Medicine.....	(1936)		Maryland
Keokuk Medical College, Iowa.....	(1906)		Iowa
State University of Iowa College of Medicine.....	(1920), (1927), (1933)	Iowa	
Tulane University of Louisiana School of Medicine....	(1932)		Louisiana
University of Minnesota Medical School.....	(1927), (1935)		Minnesota
University of Nebraska College of Medicine.....	(1936), (1937), (1937)*	Nebraska	
Woman's Medical College of Pennsylvania.....	(1930)		Penna.
School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists.....	(1937)	N. B. M. Ex.	
Northwestern University Medical School.....	(1934)	N. B. M. Ex.	
Johns Hopkins University School of Medicine.....	(1927)	N. B. M. Ex.	
Washington University School of Medicine.....	(1924)	N. B. M. Ex.	

* License has not been issued.

West Virginia March Report

Dr. Arthur E. McClue, secretary, West Virginia Public Health Council, reports the oral and written examination held at Huntington, March 21-23, 1938. The examination covered 11 subjects and included 110 questions. An average of 80 per cent was required to pass. Fifteen candidates were examined, all of whom passed. Fifteen physicians were licensed by reciprocity and one physician was licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Arkansas School of Medicine.....	(1934)		83
Georgetown University School of Medicine.....	(1936)		84.1
Emory University School of Medicine.....	(1933)		86.5
Loyola University School of Medicine.....	(1935)		84.4
Rush Medical College.....	(1936)		87
University of Illinois College of Medicine.....	(1930)		87.9
University of Louisville School of Medicine.....	(1936)		84.9
University of Maryland School of Medicine and College of Physicians and Surgeons.....	(1936)		84
Duke University School of Medicine.....	(1935)		85.2
Western Reserve University School of Medicine.....	(1935)		85.5
Hahnemann Medical College and Hospital of Philadelphia.....	(1928)		81.4
Vanderbilt University School of Medicine.....	(1934)		92.3
University of Vir.....	(1932)		80.3
Queen's Universit.....	(1932)		86.7
Universität Bern.....	(1935)		88.9
School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Maryland School of Medicine and College of Physicians and Surgeons.....	(1930)	Maryland,	Penna.
Ohio State University College of Medicine.....	(1927)		Ohio

University of Cincinnati College of Medicine.....	(1936)	Ohio
Western Reserve University School of Medicine.....	(1933)	Ohio
Jefferson Medical College of Philadelphia.....	(1916)	Penna.,
(1931) Ohio.....		
University of Pittsburgh School.....		Penna.
Medical College of the State o.....		S. Carolina
Medical College of Virginia.....		Virginia
University of Virginia Depart.....		Maryland
School	LICENSED BY ENDORSEMENT	Year Endorsement Grad. of
University of Vermont College of Medicine.....	(1934)	N. B. M. Ex.

Book Notices

A Text-Book of Ophthalmic Operations. By Harold Grimsdale, M.D., F.R.C.S., Consulting Ophthalmic Surgeon to St. George's Hospital, and Elmore Brewerton, F.R.C.S., Consulting Ophthalmic Surgeon to the Metropolitan Hospital. Third edition. Cloth. Price, \$6. Pp. 322, with 165 illustrations. Baltimore: William Wood & Company, 1937.

Eighteen years has elapsed since the publication of the second edition of this English textbook on ophthalmic surgery. The authors state that they "have in the past dealt too much with historical operations." In the present edition they have excised much that had "interest only in the development of operative surgery, and have tried, by leaving out unessential matter, to make a book more helpful to the student of ophthalmology." The object of the work is "to give the student, in outline, the chief ways in which the various problems have been attacked, and to leave him to adapt some one of them to his varying requirements." To this end they have adhered to their original classification of operations and have added a section on the surgery of retinal detachment.

The section on muscle surgery is rather inadequate. The indications for the various procedures are not clear and many antiquated operations have been retained, with the omission of many American adaptations of the various procedures. The use of the O'Connor cinch operation is not mentioned as useful in the surgical treatment of the phorias. The Wheeler operation on the oblique muscles is omitted and the Himmelsheim transplantation technic in the surgery of paralytic strabismus is not considered. The illustrations of the various muscle procedures are not particularly illuminating; especially is this true in the section on ptosis operations. The Blascovics operation is not mentioned. Many other procedures described since 1933 are omitted. In the section on lid surgery many infrequently used operations are described in detail with the omission of recently described procedures. The illustrations here also are difficult to follow and the indications not clear. Wheeler's tarsorrhaphy operation and the plastic procedures of Imre are not considered. The surgical treatment of chalazia is given nine lines and the surgery of tumors of the lids and conjunctiva is omitted. The descriptions of enucleation operations and substitutes are well done, as is the section on the lacrimal apparatus.

The chapters on intra-ocular surgery are far superior to the previous chapters. The descriptions of cataract and after-cataract surgery are clear, concise and conservative. The section on glaucoma gives a rather complete description of procedures; however, in discussing the mode of action of cyclodialysis, the authors state, after raising various questions, that "these questions must remain unanswered, except theoretically, since there are no records, to our knowledge, of any anatomical examinations." They have overlooked that both Elschnig and Kronfeld have examined and reported on microscopic sections of eyes enucleated some time after a successful cyclodialysis had been done. The treatment of complications following intra-ocular surgery is not considered by the authors. The closing chapters on surgery of the cornea and sclera are well considered, although Wiener's corneal stripping operation is omitted. The chapter on foreign bodies in the eye is good. Each chapter is preceded by a short anatomic review, which serves as an excellent foundation for the surgical anatomy of the operation to follow. The sections include a short bibliography so that original descriptions may be consulted. The text and bibliography are complete. The technic is conservative. It is a commendable work for both students and ophthalmologists alike. A comprehensive index completes the work, which from the bookmaking standpoint is good.

Die Brotnahrung des deutschen Volkes und seines Heeres in der Wirkung ihrer Eiweiße auf die Energetik des Zwischenstoffwechsels. Von Adolf Bickel, Professor der pathologischen Physiologie an der Friedrich-Wilhelms-Universität in Berlin. Paper. Price, 2.20 marks. Pp. 64. Leipzig: Georg Thieme, 1937.

The author has summarized the results of experimental studies performed in his laboratory on the nutritional value of the proteins of rye and white bread. A new technic for the study of the nutritional quality of protein was developed. Groups of male rats, each animal weighing about 200 Gm., were fed the bread or other material studied for comparison, and small amounts of a complete salt mixture, orange or lemon juice and cod liver oil. The diets were adjusted by adding small amounts of sugar, so that the nitrogen content of each food mixture was essentially identical. When rye bread and white bread were thus studied, it was found that the nitrogen balances were approximately the same (slightly positive). Animals fed 100 per cent rye bread showed the highest fecal nitrogen and the lowest urinary nitrogen. They also showed the highest ratio of carbon to nitrogen in the urine and the highest Vakut-O:N ratio (the amount of oxygen necessary to oxidize the organic substances in the urine divided by urinary nitrogen). Animals fed on bread made from mixtures of white and rye flours showed intermediate values. The author states his belief that the results indicate that the protein of rye bread has high nutritive value and that this may be due in part to the effect which it produces on the intermediary metabolism.

Love and Happiness: Intimate Problems of the Modern Woman by I. M. Hotep, M.D. With a prefatory note by Dr. Logan Clendening. Cloth. Price, \$2. Pp. 235. New York & London: Alfred A. Knopf, 1938.

Dr. Logan Clendening in this book turns philosopher on the topic of women—a dangerous subject on which to philosophize for either a doctor or a philosopher. The book is written in his best mood and seems to be based on his service as father confessor to a great many inquiring damsels. He recognizes the fact that there is at this time a highly developed interest in this subject and the need for instruction. Times have changed! The new freedom for women, the coming of the motor car, the removal of the home as the center of family life, have forced many young persons to the textbooks or to the vague and fantastic information distributed in the gutter or in the club. It is important to have a book written by a physician of long experience who knows the world and its ways from the outside rather than from the laboratory, and who can write not only so that all who read may understand but also so that all will want to read. This book merits a wide circulation.

Injectons continues intravasculaires en physiologie et en thérapeutique. Application au traitement des états de choc par l'adrénaline. Par le Docteur Jean Sallet. Paper. Pp. 260, with 5 illustrations. Paris: Librairie E. Le François, 1936.

The brochure deals with the prolonged intravenous injection of epinephrine from an experimental as well as a clinical standpoint. The author points out that these injections are dangerous unless they are accurately timed and dosed. Thus, for instance, doses of from 0.001 to 0.005 Gm. per kilogram per hour cause a sinking of the blood pressure by as much as 10 to 20 mm. of mercury during the duration of the injection. Doses of 0.008 Gm. per kilogram per hour, on the other hand, produce a rise in pressure. The threshold lies somewhere between 0.006 and 0.008 Gm. per kilogram. With this fact in mind, it is easy to appreciate the importance of an accurately timed infusion instrument, and such a one the author finds in the transfusion apparatus of Henry and Jouvet. While the quantity of epinephrine solution used is likely to vary, the most commonly employed strength is 1 cc. of the solution of epinephrine (1:1,000) in 100 cc. of physiologic solution of sodium chloride, yielding a dilution of 1:100,000. One of the most important features is regulability of speed of injection, which may have to vary from 10 cc. to several liters per hour. The optimal speed seems in general to be 1 cc. per minute. Such injections are capable of producing a rise in blood pressure, which however is followed by a fall after the discontinuance of the injection. The author also observed a diminution in urinary and bile secretion, a marked contraction of the spleen,

especially in a condition of splenomegaly, resulting in a considerable increase of red and white blood corpuscles in the circulation. He has observed twice among fifteen cases a considerable diminution in the resistance of the red corpuscles during the continued injection of the epinephrine. Hyperglycemia is produced more readily than is rise in arterial pressure, and both are more easily produced in the human being than in the anesthetized dog. By injection in the mesenteric vein of dogs, the author was able to demonstrate considerable destruction of epinephrine by the liver. Good therapeutic results have been secured in six of nine cases of surgical shock and in two cases of obstetric shock. The injections are in general well tolerated, except that sometimes headache or palpitation is complained of. It is necessary, however, to keep the pulse, respiration and blood pressure under constant supervision. While the method requires delicate technic and constant supervision, it may be life saving in the therapy of shock.

Treatment of Some Chronic and 'Incurable' Diseases. By A. T. Todd, O.B.E., M.B., M.R.C.P., Honorary Physician, Bristol Royal Infirmary. Cloth. Price, \$3. Pp. 203. Baltimore: William Wood & Company, 1937.

The adjectives employed in the title are intended to suggest that the current therapy for these conditions is either unsatisfactory or completely ineffective. Important causes of our ineptitude of therapeutics, the author contends, are the anatomic designations of and outlook on diseases and the struggle for the unification of etiology. Anatomic localizations are correct for traumas but do not help the progress of the therapy of disease, especially chronic disease. One should not say of a patient that he has a disease of the joints but rather "this sick person has maximal symptoms in his joints." The attempt at the unification of etiology is equally obstructive to progress. There are two dicta in etiology which deter therapeutic progress: (1) the like cause, the like effect; (2) all symptoms must be referable to one etiologic event. These are unutterably stupid. The like cause, a wetting, may induce pneumonia in one man and kill him; may occasion chronic rheumatism in another and cripple him; may reduce the temperature of another with typhoid and save his life. That all symptoms must be attributed to one lesion does not hold in chronic conditions, for lesions are usually multiple. The same cause must produce different effects, depending on those subsidiary and little known dysfunctions which make up what used to be called diathesis. How unorthodox the author is may be gathered from these quotations from his chapter on diabetes mellitus:

Insulin is not essential for the utilization of carbohydrate.

"Insulin should not be used in the routine treatment of diabetes," for if insulin is administered regularly to normal men or animals and then discontinued, diabetes develops and lasts for days or weeks. This can be interpreted only as injected insulin having suppressed autogenous production.

It is not my object to claim that insulin has no value in the therapy of diabetes; almost every case of diabetes in my clinic is given insulin during the early stages of treatment, but weaning from insulin is attempted at the earliest possible stage. For the comatose stages insulin is absolutely essential if life is to be saved.

Writers on diabetes mostly condemn synthalin out of hand as a dangerous remedy; very few mention it with any favor. It is true that synthalin can be dangerous if administered in too large a dosage, or conjoined with an unsuitable diet; properly administered, however, it is superior to insulin in most cases, as injection is not necessary, and the chance of cure is much greater than is the case with insulin. As adjuncts to synthalin therapy bile salts should be administered daily, and patients are advised to replace a meat ration by sweetbreads once or twice weekly. Patients are also advised to replace one meat ration each week with liver, cooked according to taste.

There is hardly a chapter in this book that does not upset one's textbook notions of the subject with which it deals. There is hardly one of them from epilepsy, false phthisis, asthma and hay fever, postencephalitic parkinsonism, exophthalmic and toxic goiter, parenchymatous nephritis, duodenitis and hepatic defect, false heart disease, constipation, acute rheumatism, chorea, ulcerative colitis or chronic rheumatism to cancer that does not contain some original ideas advanced by the author. Even if only 10 per cent of the unusual therapeutic suggestions contained in this book are as claimed, the book would be worth many times its weight in gold to every physician. One cannot help wishing that the author's vision and imagination might be tempered by a more critical and scientific attitude. Neverthe-

less, if one has the misfortune of suffering from a chronic or "incurable" disease, one could hardly have a better fate than to be treated by so optimistic and enterprising a therapist as Dr. A. T. Todd.

Normale und pathologische Physiologie der Bewegungsvorgänge im gesamten Verdauungskanal. Von Prof. Dr. med. Werner Catel, Direktor der Universitäts-Kinderklinik und -Poliklinik, Leipzig. Teil 1: Methodik, Anatomie, normale Physiologie. Paper. Price, 11.50 marks. Pp. 250, with 87 illustrations. Leipzig: Georg Thieme, 1936.

This volume sets as its goal the explanation of the normal and pathologic physiology of the entire gastrointestinal tract. It begins with a consideration of the act of mastication and in turn takes up each muscular process in each part of the gastrointestinal tract. No attempt is made to explain the secretions of the tract. Any suitable method is used, although chief emphasis is laid on roentgenographic and kymographic records. Animal experiments are occasionally cited. In addition case records taken from the files of the author are used to illustrate particular points. This volume differs from the majority of similar textbooks in that considerable space is allotted to problems arising in pediatrics. This undoubtedly reflects the position of the author, as indicated in his rank. As a textbook for practitioners and students the volume will serve as a useful aid. The statements as a whole are accurate and take advanced attitudes toward the problems encountered in gastrointestinal work. Only in a few places such as in the discussion of congenital pyloric stenosis does the author allow himself to digress into a detailed discussion. Usually the points made are direct, although adequate explanation of phenomena is offered. The pharmacologic section comprises about forty pages of the text, so that only bare statements relative to the action of the leading drugs are presented. The numerous illustrations help to drive points home.

A Practice of Orthopaedic Surgery. By T. P. McMurray, M.B., M.Ch., F.R.C.S., Director of Orthopaedic Studies and Lecturer in Orthopaedic Surgery, Liverpool University. Cloth. Price, \$5. Pp. 471, with 178 illustrations. Baltimore: William Wood & Company, 1937.

This book was written by a man of excellent training and background, having inherited from Sir Robert Jones, who in turn followed Hugh Owen Thomas, the famous Orthopaedic Shrine at 11 Nelson Street in Liverpool. The author gives his preferences rather dogmatically, which is commendable. He has avoided giving details of many operative procedures which are usually confusing. Instead, he has given the methods which he has found most satisfactory in the largest number of cases. There are fine chapters on disabilities and derangements of the knee joint. There is an excellent chapter on splints and apparatus. The chapter on adhesions and ankylosis crystallizes the teachings of Sir Robert Jones. There is an interesting reference to the Baldwin operation for ankylosis of the inferior radioulnar joint. The chapters on tuberculosis are brief but satisfactory. A good description of osteoarthritis of the knee includes the author's favorite oblique osteotomy.

The British Encyclopaedia of Medical Practice Including Medicine, Surgery, Obstetrics, Gynaecology and Other Special Subjects. Under the General Editorship of Sir Humphry Rolleston, Bt., G.C.V.O., M.D. Volume V: Endoscopy of Respiratory Tract to Goitre. Cloth. Price, \$12. Pp. 683, with 145 illustrations. London & Toronto: Butterworth & Co., Ltd., 1937.

From endoscopy through goiter marks the progress of the fifth volume of the British Encyclopaedia of Medical Practice. Among the leading subjects are epilepsy, eruptions, the eye, food and the gallbladder. Special interest attaches to a fine article on etiquette and ethics in medical practice and to deformities and diseases of the foot. This volume, like the others in this series, is handsomely published and profusely illustrated and represents essentially a series of short monographs, written from the British point of view. The fact that the British pharmacopeia is the basis of all therapeutic discussions tends to diminish somewhat the value of the work for the American reader. The discussion on epilepsy is by the well known British neurologist W. Russell Brain (rather strange that two of the greatest neurologists should have been named Brain and Head). Notwithstanding the up-to-date character of the book, it contains no reference to the study of the brain in epilepsy by encephalography. This article seems to be essentially a routine

discussion of the subject without much that is stimulating or new. Especially interesting in this book is the section on gassing and poison gases in war. This is a subject which is today concerning the British medical profession far beyond the degree of interest aroused previously. This article, which is written by Lieut. Col. L. T. Poole of the Royal Army Medical College, is one of the most succinct and complete discussions of this kind yet made available to the general reader.

Textbook of Gastroscopy. By Norbert Henning, Professor of Medicine in the Municipal Hospital, Fürth. Translated by Harold W. Rodgers, F.R.C.S., St. Bartholomew's Hospital, London. Cloth. Price, \$2.75. Pp. 86, with 33 illustrations. New York & London: Oxford University Press, 1937.

The German edition of Henning's textbook was reviewed in THE JOURNAL Dec. 28, 1935. Rodgers' translation is excellent. Unfortunately he has not changed such passages as are now obsolete; e. g., the recommendation of the rubber sponge, a device which in the meantime has proved to be dangerous. However, the small volume will be welcome to internists and surgeons who want to acquaint themselves with the sudden development of a method which seems to have become an important asset to the medical armamentarium. The gastroenterologist and the gastroscopist will be in need of one of the more detailed textbooks on this subject. Rodgers, in his preface, describes the rapid development of gastroscopy in an amusing way. "With the invention of the flexible gastroscope there came an awakening in gastric disease, and the German clinics have had visitors from all parts of the world go to them for their first step in gastroscopy. The English invasion began toward the end of 1934, and since then several young surgeons and fewer young physicians have, ignoring Lord Horder's pronouncement that gastroscopy was repugnant to the English character [sic], traveled to Leipzig . . . and have come back with knowledge, enthusiasm, and some, maybe, have even smuggled the conveniently flexible instrument through the customs strapped to their legs and hidden by their trousers." This, indeed, is history of medicine. However, the young American physician, traveling through Europe, should be warned to consider the custom officials of New York to be smarter than those of London. Rodgers also states in his preface that he has never met a gastroscopist who has had the instrument passed on himself. This experience is not shared by the reviewer.

Muir & Ritchie's Manual of Bacteriology. Revised by Carl H. Brown, M.D., LL.D., D.P.H., Gardner Professor of Bacteriology, University of Glasgow, and Thomas J. Mackie, M.D., D.P.H., Irvine Professor of Bacteriology, University of Edinburgh. Tenth edition. Cloth. Price, \$7.25. Pp. 996, with 218 illustrations. New York & London: Oxford University Press, 1937.

The original publication of this book occurred in 1897. Sir Robert Muir has withdrawn from participation in this revision so that the original authorship has now come to an end. This edition has been added to especially in the chapters on filtrable viruses. The nomenclature is out of date and is not in keeping with present accepted views. The physiologic and immunologic portions are rather superficially handled. There are numerous omissions of important work during the past five or six years in many of the fields. The plan of putting the colored plates in the front and all the bibliography in the back of the book is an awkward arrangement. The book leaves the impression of being superficial and skimming over a large amount of material without a serious consideration of any one subject.

How to Feed Young Children in the Home. By Mary E. Sweeney and Dorothy Curtis Buck. Paper. Gratts. Pp. 68, with illustrations. Detroit: The Merrill-Palmer School, 1937.

This is a brief review of the values in ordinary foods, sufficiently comprehensive for the use of the mother in the home, plus some good advice about children's diets, and many excellent recipes for dishes suitable for feeding children. It is published under theegis of the well known Merrill-Palmer School, Detroit, with the aid of a grant from the Irradiated Evaporated Milk Institute. There is a heavy emphasis in the recipes on irradiated evaporated milk. While there is no overt suggestion that bottled fresh milk is inferior, that impression is subtly conveyed. Otherwise there is no objection to the booklet, which should prove useful, especially to those mothers who must rely

on free educational material. Since the sponsorship of the irradiated evaporated milk interests are definitely and openly stated in the booklet, it can be weighed on its own merits with full knowledge of its source. This is a fundamental requirement for educational acceptability of material from commercial sources or developed with commercial aid.

Modern Dietary Treatment. By Margery Abrahams, M.A., M.Sc., Dietitian to St. Bartholomew's Hospital, London, and Elsie M. Widdowson, B.Sc., Ph.D., Biochemist to King's College Hospital, London. Cloth. Price, \$3.25. Pp. 328. Baltimore: William Wood & Company, 1937.

This book gives a concise and informative review of the principles of nutrition. The first part discusses briefly the food essentials and their importance to the human body. The second part deals with the diseases in which dietary treatment is necessary. Examples of diets are given for patients having these diseases, followed by recipes that offer suggestions of how to carry out these diets with a variety of foods and food combinations. The tables of analysis of the English foods, both raw and cooked, add merit to the book. On the whole this volume should be of practical value as a reference book to students of nutrition.

Algunas de las Impresiones y notas de mi última estadía en Norte América. Por el Doctor L. Lopez Villoria. Paper. Pp. 38, with 7 illustrations. Caracas: Academia nacional de medicina, 1937.

This book is a report of the author to the Academia Nacional de Medicina of Caracas on his personal impressions and professional observations during his postgraduate studies in the United States. It shows the large field covered in bronchoscopy and esophagoscopy in the courses given by Chevalier Jackson, Chevalier L. Jackson and some of their most prominent pupils at the University of Pennsylvania. The clinical and surgical work which is performed during the courses, the lectures delivered and the technics shown and other demonstrations are described in detail. The book shows also the development of ophthalmologic and otorhinolaryngologic surgery by American specialists. Special references are given to work and technics of Dr. Ramón Castroviejo of the Columbia Presbyterian Hospital and Simon L. Ruskin of the Harbor Polyclinic of New York. Reference is made also to surgical technics shown and explained in some scientific centers in the United States by well known foreign surgeons. The book is of value especially for specialists in bronchoscopy, esophagoscopy, ophthalmology and otolaryngology.

A Textbook of Medicine. By American Authors. Edited by Russell L. Cecil, A.B., M.D., Sc.D., Professor of Clinical Medicine, Cornell University Medical College, New York City. Associate Editor for Diseases of the Nervous System: Foster Kennedy, M.D., F.R.S.E., Professor of Neurology, Cornell University Medical College. Fourth edition. Cloth. Price, \$9. Pp. 1,614, with 42 illustrations. Philadelphia & London: W. B. Saunders Company, 1937.

The first edition of this book was published in 1926 and the third printing in 1933. The fourth edition provides extensive revision, reediting and resetting. Six contributors have died since the publication of the first edition. In the present edition a number of new topics have been introduced. Moreover, the editors and publishers have decided to establish a retiring age for contributions so that new authors and new treatises appear for many subjects discussed by other authors in previous editions. The work is so authoritative, so complete and so thorough that it may be generally recommended as one of the best available works in its field.

Fundamentals of Anatomy. By Carl C. Francis, A.B., M.D., Senior Instructor in Anatomy, Laboratory of Anatomy, Western Reserve University, Cleveland, Ohio. Cloth. Price, \$2.75. Pp. 320, with 176 illustrations. St. Louis: C. V. Mosby Company, 1937.

This is an exceedingly brief survey of human anatomy. The illustrations are excellent. Most of them have been drawn from preparations in the Hamann Museum in Cleveland. Since the brief text includes histology, the anatomy of the nervous system and surface anatomy, as well as the gross anatomy of the rest of the body, it is evident that the account of each structure is exceedingly brief. Five lines are devoted to the hypophysis, seven to the frontal bone, nine to the portal vein, and a trifle over two pages to the entire small intestine.

Clinical Endocrinology. By Samuel A. Loewenberg M.D., F.A.C.P., Clinical Professor of Medicine, Jefferson Medical College, Philadelphia. Foreword by Hobart A. Reimann, M.D., Professor of Medicine and Clinical Medicine, Jefferson Medical College, Philadelphia. Cloth. Price, \$8. Pp. 825, with 194 illustrations. Philadelphia: F. A. Davis Company, 1937.

During the past few years each of the leading publishers in the field of medicine has made available a work on endocrinology. The author of this volume is clinical professor of medicine in Jefferson Medical College in Philadelphia. The book follows established lines and is based on an extensive bibliography from which the author has chosen wisely. In his considerations of the various glands he follows the outline of history, anatomy, physiology, pathology and the diseases affecting the gland in question. The concluding chapters concern undetermined endocrine activities and the significance of laboratory observations. The book is in every sense a practical one and should be useful to the general practitioner as a reference work.

The Mayo Clinic. By Lucy Wilder. Second edition. Cloth. Price, \$1.50. Pp. 96, with illustrations by Ruth Barney. New York: Harcourt, Brace & Company, 1938.

Printed first in 1936, this new edition is handsomely republished and illustrated with charming drawings and pictures; altogether a most satisfactory book.

Miscellany

TRANSFERRING CASE RECORDS TO FILM SOLVES STORAGE PROBLEM

SIXTEEN THOUSAND RECORDS STORED WHERE TWO
HUNDRED WERE STORED BEFORE

STELLA FORD WALKER, CHICAGO
Chief Medical Statistician and Medical Librarian, Cook County Hospital

In the comprehensive program of improvement and modernization now going forward at Cook County Hospital, the transferring of case records to film in the medical record room is attracting considerable interest.

Every hospital sooner or later is faced with the problem of finding space for the steadily expanding file of patients' histories. Cook County Hospital is no exception to the rule, since 50,000, 60,000 and now 70,000 new histories must be accommodated annually. Four basement rooms, in addition to the record room proper, proved to be inadequate and unsatisfactory. Histories damaged by dust and humidity from overhead water pipes or grown fragile with age were destroyed to make room for the constant stream of new histories. The medical staff, recognizing the need for permanent storage of records, talked of constructing a building for the voluminous files. The adoption of a film storage plan dramatically changed the entire picture.

The transfer of written and printed material to film is not in the experimental stage. The Library of Congress has photographed newspapers on 35 mm. film. Many banks now keep a photographed record of canceled checks before returning the checks to their customers. Insurance companies and many industrial companies are using film storage. State and federal departments are finding a solution to the problem of providing permanent storage of important public documents. If Cook County Hospital is the first in the hospital field to adopt this modern method for the storage of medical records, this pioneering is justified because of the bulk of records handled with a limited personnel.

At first questions were raised as to the feasibility of transferring records to film, but the saving in space and filing time

The author wishes to acknowledge the cooperation of Commissioner Frank Bobrytzke, Chairman of the Hospital Committee, and Mr. Anton C. Negri, Efficiency Engineer.

The Cook County Hospital Medical Staff, especially the Committee on Medical Hospital Records, has been most helpful in supporting this and other new procedures for the improvement of Record Room service.

was so desirable that further study of the plan seemed imperative. The many advantages of the method now dominate the picture.

The records are photographed page by page on 16 mm. film and stored on receiving spools similar to those used for 100 feet of motion picture film. The fear of creating a fire hazard was the first objection to be eliminated. The acetate film used will burn as readily as paper but not any more freely, and it is not

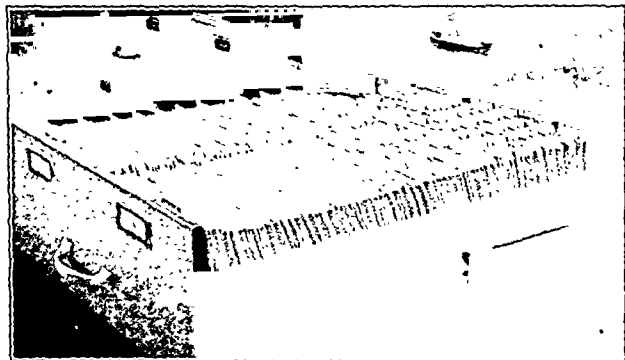


Fig. 1.—One drawer of name cards size 5 by 8 inches may be replaced by one small carton of 100 foot 16 mm. film.

explosive. Being stored in small filing cabinets, the film will be less of a fire hazard than the bulky paper records. No special care of the film in storage is required.

The legality of the photographed record is easily established. As long as an original record is available, its production in court can be demanded. When the original is destroyed, the photograph is acceptable as evidence. "The eye of the camera don't lie." (From opinion rendered by Chief Justice Edward Smith, *Tobin v. Knaggs*, June 9, 1937.) As a matter of fact the continuous film, recording one page after another, cannot be changed without detection. Sheets cannot be removed as from a collection of separate pages, and the microphotographs cannot be modified by the use of matching ink and carefully selected pen.

A roll of 16 mm. film (stored in a small carton, as shown in figure 1) is substituted for a drawer containing a double file of name cards size 5 by 8 inches (12 by 20 cm.). An alphabetic file once transferred to film will never again get out of order, no matter how many people have occasion to consult the file.

The work of photographing the records is offset by the elimination of the work of transferring bulky records and by the elimination of trips to distant vaults—the small spools of film being readily stored in the main record room.

Physicians sitting down to read the photographed records for the first time remark on the clearness of the record and the ease with which they can pass over the pages in which they have no interest and find the particular information they are looking for.

The photographing of the records is made entirely mechanical by means of a special camera enclosed in a photographing chamber. As a page is fed into the slot provided, it passes over a roller geared to synchronize with the movement of film past the camera lens. There is no waste of film; long and short pages follow closely on one another. The fixed distance between camera and record sheets and the fixed amount of illumination provided within the photographic chamber make it possible to use film inexpensive as compared with that made for the camera which must accommodate to a wide range of distances and a variety of lighting conditions. The photographing is done as rapidly as the pages can be fed over the roller. The machine can accommodate a speed of 3,000 sheets an hour. An operator has acquired a satisfactory rate of speed who feeds 1,500 sheets an hour accurately without over-riding or picking up more than

one sheet at a time. The film is removed from the camera on 100 foot receiving spools, which are sent to the company's plant for developing.

The projector has a ground glass screen so arranged as to carry a "life-sized" reproduction of the photographed pages (8½ by 11 inches at Cook County Hospital). A small hand crank spins the record to the desired page, guided by serial numbers thrown on the screen to the right of the pages.¹

The ordinary transfer case, holding 200 records of letter-sized paper, will hold 16,000 records on film with each receiving spool protected by a paper carton. However, a special cabinet has been ordered at Cook County Hospital; the drawers will be of the proper depth and will carry three rows of the film rolls. It is comparatively an inexpensive matter to provide locks and fireproof cabinets if they seem advisable.

Hospital inspectors, seeing the method in use, have recognized the advantages of this method over that of storing the original bulky records.

One advantage not at first anticipated, but of major importance, is the inspiration given toward obtaining better records in anticipation of permanent storage. The first intern to see the photographed records at Cook County Hospital said "We should get more on a page and be more careful of what and how we write." Each physician and nurse seeing the projected records expresses similar reactions, and now a number of committees are working in this hospital to select better forms for histories and to supervise the production of records worthy of permanent storage.

The question of how long the original records should be kept before being photographed for film storage is one for the individual hospital to decide; the answer depends on the storage space available, the percentage of records in the files of a given year which may be required for readmitted patients and the protection afforded the original record by folders, closed boxes, dustproof vaults or other means.

By the building of a simple darkroom over the projection table, a means will be afforded for obtaining an imprint from the ground glass of the projector of any page or pages required for any purpose. I am told that if the sensitized paper is purchased in gross lots the cost of obtaining an enlargement will be in the neighborhood of 1 cent a page. Thus if a patient returns to the hospital his record may be reproduced and sent to the ward if the doctor does not find it convenient to get the

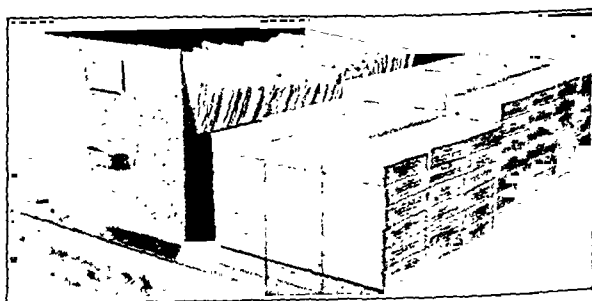


Fig. 2.—The rectangle of boxes on the right contains 100 foot rolls of film representing 16,000 case histories; the drawer, which is the same size, contains 200 histories on paper.

useful information directly from the projector. If an old record is required in court, the projector may be conveniently carried into court, so that the film may be projected there, or an enlargement may be prepared. It is predicted, however, that with government departments adopting the method for important documents it will not be long before suitable projectors will be available for court use.

1. The equipment used at Cook County Hospital is supplied by Recordak Corp., a subsidiary of the Eastern Kodak Company. A more detailed description of the equipment and other information may be obtained directly from the companies supplying such equipment.

The cost of film is the main item of expense, the other equipment being merely rented for the required time. It may suffice here to say that the cost will compare favorably with the cost of providing folders and suitable filing cases. At Cook County Hospital a WPA project provides the workers necessary for the photographing. With this advantage on the side of the new method, film storage costs about half as much as folders and file cabinets for the bulk of records eliminated.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Drugs: Pamphlets Not Accompanying Drug as Evidence of Wilful Misbranding.—The defendant, Mrs. Adah Alberty, was convicted under the federal food and drugs act of 1906, as amended, of shipping in interstate commerce certain wilfully misbranded preparations. The preparations were "Alberty's Calcatine," labeled to be used for acidosis, indigestion, "calcium starvation," diarrhea, brain irritation, and a number of other afflictions; "Alberty's Liver Cell Salts" for "ailments marked by excessive secretions of bile and derangement of the liver, gravel, sand in the uterine [sic], biliousness, headache with vomiting of bile, bitter taste, diabetes, trouble arising from living in damp places, malaria, gout"; "Alberty's Lebara Organic Pellets" for acidosis, dormant liver, and other ills; and "Alberty's Anti-Diabetic Vegetable Compound Capsules." The last-named preparation purported, apparently, to be effective only for diabetes. The trial court fined the defendant \$1,000 and assessed against her the costs of prosecution, which amounted to \$1,499.80. The defendant then appealed to the U. S. circuit court of appeals, ninth circuit.

At the trial the government introduced in evidence certain pamphlets written by the defendant and dealing with the necessity for and the use of the preparations charged to be misbranded. These pamphlets were "Calcium, the Staff of Life," "Alberty's Treatment for Diabetes," and "The Hourglass." They had been shipped in interstate commerce and generally distributed but had not been sent with or appended to the preparations. The defendant contended that the trial court erred in admitting this evidence. In the opinion of the appellate court, however, this evidence was not irrelevant. The issue presented was whether the claims on the labels of the preparations were false and fraudulent. These pamphlets were properly admissible to show the defendant's knowledge as to the truth or falsity of the claims on the labels. Obviously, if false and extravagant claims as to "Calcatine," for example, were made in a pamphlet spread abroad by the defendant, it would be persuasive evidence that similar claims on the labels of the preparation were false and fraudulent. The court could find nothing in the record to warrant interference with the judgment of the trial court and consequently affirmed that judgment.—*Alberty v. United States*, 91 F. (2d) 461.

Physical Examinations: Rights of Defendant in Personal Injury Action.—The plaintiff sustained an injury to his back, which he attributed to the negligence of the defendant company. In a suit to recover damages for the personal injury sustained, instituted in the United States district court for the eastern district of New York, the defendant company entered a motion for an order directing the plaintiff to present himself at the office of a physician designated by the company for a physical examination, including the taking of roentgenograms.

Section 306 of the Civil Practice Act of New York provides that in an action to recover damages for personal injuries, the "court, by order, shall direct that the plaintiff submit to a physical examination by one or more physicians or surgeons, to be designated by the court or judge," if the defendant presents satisfactory evidence to the court that he is ignorant of the nature and extent of the injuries complained of. This section,

said the court, is quite definite and does not permit the defendant to designate the examining physician. Such a designation has to be made by the court or judge. The plaintiff argued that, while the court was authorized to appoint a physician and to require the plaintiff to submit to a physical examination, the Civil Practice Act does not authorize the taking of roentgenograms. While it is true, the court said, that at the time the act was passed there were few roentgenograms taken as compared with the present day, nevertheless a physician in the treatment of a bone injury such as was claimed by the plaintiff would be remiss in his duty and guilty of negligence if he did not take roentgenograms. Furthermore, the decisions of the New York state courts are in accord that roentgenograms are proper in a case like the present one.

The defendant further contended that only the defendant's attorneys should receive a copy of the report of the examining physician. But, the court pointed out, a law suit should not be a game of chance; one side should not have an advantage over the other. If the defendant is entitled to a copy of the report, so also is the plaintiff.

The court therefore entered an order appointing a disinterested physician to make the physical examination and ordered the plaintiff to submit to the examination, including a roentgenogram if the examining physician deemed it necessary. To protect fully the rights of the plaintiff and the defendant, the court authorized the plaintiff's and defendant's physicians to be present at the examination conducted by the physician designated by the court. Since the defendant made the application for the appointment of the examining physician, the expenses incident to that examination, the court thought, should be borne by the defendant. In case the examining physician and the defendant were unable to agree on a proper fee, the court indicated that it would fix that fee.—*Mitchell v. Pure Oil Co.*, 20 F. Supp. 1021.

Workmen's Compensation Acts: Jurisdiction of Industrial Commission Over Medical Fees.—The plaintiff, a physician, had on several occasions been employed by the district manager of the defendant company to take care of injured employees. In this case the plaintiff, having been called to treat an employee, was advised by the district manager to "do whatever is necessary to take care of him." The company, however, refused to pay for the treatment and the plaintiff sued at law for his fee. From a judgment for the physician, the company appealed to the Supreme Court of South Dakota.

The company contended that the physician had no right to sue at law, that since it was operating under the workmen's compensation act the industrial commissioner had exclusive jurisdiction in the matter. The Supreme Court, disagreeing with this contention, pointed out that, while as between employer and employee the remedy under the workmen's compensation act is exclusive, physicians are neither employers nor employees within the meaning of the act. The general rule is thus stated in *Ross v. Austin Drilling Co.*, 131 Kan. 824, 293 P. 757:

The Compensation Act, therefore, does not represent a contract either between the physician and the injured workman, or between the physician and the employer of the workman. There is nothing in the Compensation Act which prevents either an employer or employee from making a contract with the physician for services, as such contracts are usually made, and a contract when so made with the physician is free from the terms of the Compensation Act, unless, of course, that act is specifically made a part thereof.

The provision in the workmen's compensation act that "fees of . . . physicians for service under this article shall be subject to the approval of the industrial commissioner" had no reference, in the opinion of the court, to a contract of employment between a physician and an employer.

The company finally contended that the evidence failed to disclose any contract between it and the plaintiff. The court was satisfied, however, that the facts and circumstances disclosed by the evidence were sufficient to justify the jury in finding a mutual intention on the part of the parties to contract. The plaintiff had been employed by the company to treat its employees on prior occasions; under the workmen's compensation act there was a duty on the company to furnish its injured

employees with medical services, and the district manager called the plaintiff and told him to do whatever was necessary to take care of the injured employee. Clearly, in the opinion of the court, this evidence was sufficient to justify the jury in finding an intention on the part of the defendant to pay the plaintiff for his services.

The judgment in favor of the physician was accordingly affirmed.—*Hannon v. Interstate Power Co. (S. D.), 275 N. W. 358.*

Malpractice: Release of Unfounded Claim Against Alleged Tort Feasor as Bar to Action Against Physician.—The plaintiff was accidentally shot in her leg and the defendant physicians, called to attend her, amputated the leg. Subsequently, she executed a written release specifically releasing the person who shot her "from any and all claims, damages or liabilities thereunder whatsoever." In a suit against the defendant physicians wherein she alleged that they negligently and needlessly amputated her leg, the physicians offered the release as a defense. The trial court ruled out a reply interposed by the plaintiff to the effect that in executing the release she had no intention of releasing her cause of action against the physicians and that she signed the release on the representation of the attorneys of both parties that the release in no manner impaired her right to proceed against the physicians. Judgment was given on the pleadings for the physicians and the plaintiff appealed to the Supreme Court of Minnesota.

The law is settled in Minnesota, said the court, that where a person is injured by the wrong or neglect of another and is not negligent in the selection of a physician to treat him, the wrongdoer is liable for all the proximate results of his own act, although the consequences of the injury would have been less serious than they proved to be if the physician had exercised proper professional skill and care. Under this rule of law, the person who shot the plaintiff could have been held liable for the alleged negligence of the defendant physicians. The rule is equally well settled that a release by the injured person of his right to recover damages from the original wrongdoer operates as a bar to an action for malpractice against a physician, and this is so even though the person attempted to be charged as the original wrongdoer and with whom the settlement has been effected was not legally liable. For these reasons, the court concluded that the release was a complete bar to the plaintiff's action against the physicians for malpractice.

The judgment for the defendant physicians was affirmed.—*Ahlsted v. Hart (Minn.), 275 N. W. 404.*

Hospital Associations: Liability to Hospital that Furnishes Services to Members.—An Oregon law authorizes the formation of corporations empowered to enter into contracts "with individuals, families, employees, associations, societies or with employers for the benefit of employees for the furnishing of medicine, medical or surgical treatment, nursing, hospital service, ambulance service, dental service, burial service, or any or all of the above enumerated services or any other necessary services contingent upon sickness, accident, or death." Such a corporation is required to file a surety bond in the sum of \$10,000 as a guarantee "of the due execution of the contracts to be entered into by such corporation . . . in accordance with the provisions of this act." The defendant, the Employees' Hospital Association, duly executed the required bond. It thereafter entered into a contract with the relator, the Hood River Hospital, whereby the hospital agreed to furnish hospital accommodations and services to sundry individuals who were beneficiaries of the Employees' Hospital Association. The association failed to pay the hospital for rendering these services and the present proceedings were instituted by the state, on the relation of the Hood River Hospital, against the association and the surety company to subject the bond filed by the association to the payment of the amount due the hospital. The trial court gave judgment for the plaintiff and the surety company appealed to the Supreme Court of Oregon.

The surety company contended that the protection of the bond extended no further than the beneficiaries of the association and not to a hospital that actually furnishes the services that

the association was organized to render. It is obvious, the court said, that in requiring a bond the statute looks to the protection of persons who become members of the association in order to obtain the benefit of a sort of hospital and medical insurance. Its purpose was to guarantee the fulfillment of the association's engagements in this respect. The association has no hospital of its own nor is it authorized to practice medicine. It therefore delegated to other agencies the actual discharge of the functions with which a state law had invested them. That being so, if these agencies are not compensated under their contract with the association it is reasonable to assume that they will cease to undertake the performance of these services, the association will be wholly without the means to carry out its agreement with its members and their employers, and the latter would lose the benefits which they hoped to gain by joining the association. The language of the statute, the court continued, is broad enough to include contracts which the association makes with others for the furnishing of hospital and medical services to the association's members. Entering into such contracts is assuredly doing a hospital business, and it is such contracts that are required to be guaranteed by the statute. The court was therefore of the opinion that the trial court properly gave judgment for the plaintiff. That judgment was affirmed.—*State ex rel. Hood River Hospital v. Employers' Hospital Assn. (Ore.) 73 P. (2d) 693.*

Society Proceedings

COMING MEETINGS

- American Medical Association, San Francisco, June 13-17. Dr. Olin West, 535 North Dearborn St., Chicago, Secretary.
- American Academy of Pediatrics, Del Monte, Calif., June 9-11. Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill., Secretary.
- American Academy of Tuberculosis Physicians, San Francisco, June 17-18. Dr. Arnold Minnig, 638 Metropolitan Bldg., Denver, Secretary.
- American Association of Industrial Physicians and Surgeons, Chicago, June 6-9. Dr. Volney S. Cheney, Armour and Company, Union Stock Yards, Chicago, Secretary.
- American Association of Medical Milk Commissions, San Francisco, June 13-14. Dr. Paul B. Cassidy, 2037 Pine St., Philadelphia, Secretary.
- American Dermatological Association, Del Monte, Calif., June 9-11. Dr. Fred D. Weidman, 36 Hamilton Walk, Philadelphia, Secretary.
- American Gynecological Society, Asheville, N. C., May 30-June 1. Dr. Richard W. TeLinde, 11 East Chase St., Baltimore, Secretary.
- American Heart Association, San Francisco, June 10-11. Dr. Howard B. Sprague, 50 West 50th St., New York, Secretary.
- American Medical Women's Association, San Francisco, June 12-14. Dr. Helen A. Cary, 1634 N.E. Halsey St., Portland, Ore., Secretary.
- American Ophthalmological Society, San Francisco, June 9-11. Dr. Eugene M. Blake, 303 Whitney Ave., New Haven, Conn., Secretary.
- American Pediatric Society, Bolton Landing, N. Y., June 9-11. Dr. Hugh McCulloch, 325 North Euclid Ave., St. Louis, Secretary.
- American Proctologic Society, San Francisco, June 11-13. Dr. Curtice Rosser, 710 Medical Arts Bldg., Dallas, Texas, Secretary.
- American Psychiatric Association, San Francisco, June 6-10. Dr. W. C. Sandy, State Education Bldg., Harrisburg, Pa., Secretary.
- American Radium Society, San Francisco, June 13-14. Dr. F. W. O'Brien, 465 Beacon St., Boston, Secretary.
- American Rheumatism Association, San Francisco, June 13. Dr. Loring T. Swaim, 372 Marlborough St., Boston, Secretary.
- American Society of Clinical Pathologists, San Francisco, June 9-11. Dr. A. S. Giordano, 531 North Main St., South Bend, Ind., Secretary.
- American Urological Association, Quebec, Canada, June 27-30. Dr. Clyde L. Deming, 789 Howard Ave., New Haven, Conn., Secretary.
- Association for the Study of Allergy, San Francisco, June 9-10. Dr. J. Harvey Black, 1405 Medical Arts Bldg., Dallas, Texas, Secretary.
- Association for the Study of Internal Secretions, San Francisco, June 13-14. Dr. E. Kost Shelton, 921 Westwood Blvd., Los Angeles, Secretary.
- Connecticut State Medical Society, Groton, June 1-2. Dr. Creighton Barker, 258 Church St., New Haven, Secretary.
- Maine Medical Association, Bar Harbor, June 26-28. Dr. F. R. Carter, 22 Arsenal St., Portland, Secretary.
- Massachusetts Medical Society, Boston, May 31-June 2. Dr. Alexander S. Begg, 8 The Fenway, Boston, Secretary.
- Medical Library Association, Boston, June 28-30. Miss Janet Doe, 2 East 103d St., New York, Secretary.
- Minnesota State Medical Association, Duluth, June 29-July 1. Dr. E. A. Meyerding, 11 West Summit Ave., St. Paul, Secretary.
- National Tuberculosis Association, Los Angeles, June 20-23. Dr. Charles J. Hatfield, 7th and Lombard Sts., Philadelphia, Secretary.
- New Mexico Medical Society, Santa Fe, June 6-8. Dr. L. B. Cohenour, 219 West Central Ave., Albuquerque, Secretary.
- Rhode Island Medical Society, Providence, June 1-2. Dr. Guy W. Wells, 124 Waterman St., Providence, Secretary.
- Western Branch of American Public Health Association, Portland, Ore., June 6-8. Dr. William P. Shepard, 600 Stockton St., San Francisco, Secretary.
- West Virginia State Medical Association, White Sulphur Springs, July 11-13. Mr. Joe W. Savage, Public Library Building, Charleston, Executive Secretary.

Current Medical Literature

AMERICAN

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American Journal of Cancer, New York

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*Carcinomatosis of Meninges of Spinal Cord and Base of the Brain, Without Involvement of Parenchyma, Secondary to Carcinoma of the Lung. B. J. Alpers and O. N. Smith, Philadelphia.—p. 361.

Neoplasia in Rabbits Following Administration 1:2:5:6-Dibenzanthracene. H. Burrows and E. Boyland, London, England.—p. 367.

Intranucleolar Bodies in Normal and Neoplastic Human Tissue. R. C. Page, J. F. Regan and W. C. MacCarty, Rochester, Minn.—p. 383.

Agglutination Tests in Study of Tumor Immunity, Natural and Acquired. T. Lumsden, London, England.—p. 395.

Influence of Calories Per Se on the Growth of Sarcoma 180. F. Bischoff and M. Louisa Long, Santa Barbara, Calif.—p. 418.

*Immunization Against Neoplasm: Its Effect on Nitrogen Metabolism of the Host. R. H. Oster and W. T. Salter, Boston.—p. 422.

Glycolysis in Tumor Tissue: II. Effect of Certain Sugars on the Hydrogen Ion Concentration and Lactic Acid Content of Walker Sarcoma 319. Frances F. Beck, Ruth Musser, C. J. Carr and J. C. Krantz Jr., Baltimore.—p. 434.

Tumor Growth in Mice One-Fifth Saturated with Deuterium Oxide (Heavy Water). H. G. Barbour and E. Allen, with collaboration of W. U. Gardner, L. C. Strong, J. B. Hamilton, A. Kirschbaum and P. H. Barbour Jr., New Haven, Conn.—p. 440.

Agent and Soil in Experimental Carcinogenesis. W. H. Woglom, New York.—p. 447.

Observations on Intravenous Administration of Colloidal Solutions of Carcinogenic Hydrocarbons in Rabbits. G. V. LeRoy, E. V. Kandel and A. Brunschwig, Chicago.—p. 449.

Metastatic Carcinomatosis of Spinal Meninges.—Alpers and Smith cite a case of primary carcinoma of the lung with metastatic carcinomatosis limited to the meninges of the spinal cord and the base of the brain, particularly the pons. It is suggested that the carcinoma cells extended directly from the lung, along the lymphatic spaces in the intercostal nerves, to the lymphatic spaces of the posterior roots and ganglions of the posterior roots to the spinal meninges.

Immunization Against Neoplasm.—The observations of Oster and Salter confirm the correlation reported by Dodds between immunity to inoculated cancer and a biochemical response to x-rays. Under favorable conditions the two associated phenomena may be induced at will by a standard artificial technic. The finding of the same biochemical response in artificial immunized animals as Dodds found in naturally immune animals suggests that the observation is intimately concerned with the chemical basis of malignant disease. These chemical observations have been observed only in strains of animals which are naturally immune or can be artificially immunized against neoplasm. It is not clear how the absorbed x-radiation produces the reaction. It is conceivable that other agents which mobilize body protein might produce the same effect.

American Journal of Clinical Pathology, Baltimore

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Dialogue on Relations of Genetics and Experimental Embryology to Neoplasia. C. C. Little and S. P. Reimann, Philadelphia.—p. 109.

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Frozen Section Biopsy at Operation. M. J. Breuer, Lincoln, Neb.—p. 153.

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Course of Blood and Spinal Fluid Glucose in Man (Schizophrenic Patients) After Shock Doses of Insulin. G. W. Day, E. O. Niver and M. M. Greenberg, Galveston, Texas.—p. 206.

American J. of Digestive Diseases, Fort Wayne, Ind.

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Follicular Lesions of Vitamin A and C Deficiencies: Critical Survey. H. Keil, New York.—p. 40.

Value of Cholesterol in Milk.—Stringfield points out that the foods richest in cholesterol are egg yolk, beef and calf brains, kidney and liver, which contain as much as 120 times the cholesterol found in whole milk. At least forty other foods exceed milk in their proportions of cholesterol per hundred grams, including oranges, bread, lean beef, chicken, chocolate, ham and lard. When foods containing cholesterol are eaten, not all of this substance passes directly into the blood stream, much of it being converted by the enzyme cholesterolase into other substances, some of which are excreted and some of which may go to the tissues in the form of esters. The small amount of cholesterol in milk is beneficial rather than detrimental. There seems to be no adequate reason for urging normal persons to curtail the amount of cholesterol in the diet, or to incriminate milk as a factor in the development of any degenerative disease, including all forms of arteriosclerosis.

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- Some Data of Psychic Morbidity of Jews and Arabs in Palestine.* L. Halpern, Jerusalem, Palestine.—p. 1215.
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Malarial Therapy in Neurosyphilis.—Boyd and his associates compare the late results of malarial therapy supplemented by chemotherapy in 190 cases of cerebrospinal syphilis with twenty concurrent cases treated by chemotherapy alone. Of the patients receiving malarial therapy, 55 per cent show improvement or complete remission as contrasted with 30 per cent of those receiving chemotherapy alone. The quartan parasite appears to be the most effective agent for producing the requisite number of severe paroxysms. Best results were secured from the application of malarial therapy to persons less than 30 years of age. Such patients react favorably to fewer paroxysms than appear necessary to produce comparable results in older persons. Better results have been secured from asymptomatic cases than from symptomatic. Of the latter, the cases presenting only organic signs have given better results than those in which mental involvement has existed. The severity of the paroxysms experienced, rather than their

number, appears to have a definite influence on the results secured. It is suggested that the objective of malarial therapy should be the subjection of the patient to a minimum of twenty-one paroxysms which attain a height of 104 F. or more, and that, if the first strain or species of parasite employed fails to produce this minimum, reinoculation with different strains or species should be undertaken until this minimum is reached.

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- Method for Determination of Atabrine in Blood.* C. J. Gentzkow, Ancon, Canal Zone.—p. 149.
- Comparative Susceptibility of Certain Species of Nearctic and Neotropical Anophelines to Certain Strains of Plasmodium Vivax and Plasmodium Falciparum from the Same Regions.* M. F. Boyd, Tallahassee, Fla.; H. P. Carr, Havana, Cuba, and L. E. Rozeboom, Panama, Republic of Panama.—p. 157.
- Critical Study of Clinical Laboratory Technics for Diagnosis of Protozoan Cysts and Helminth Eggs in Feces: I. Preliminary Communication.* E. C. Faust, J. S. D'Antoni, V. Odom, M. J. Miller, C. Peres, W. Sawitz, L. F. Thomen, J. Tobie and J. H. Walker, New Orleans.—p. 169.
- Fatal Case of Chagas Disease Occurring in a Man 77 Years of Age.* K. R. Lundberg, Ancon, Canal Zone.—p. 185.
- Cardiac Changes in Dogs Experimentally Infected with Trypanosoma Cruzi.* C. M. Johnson, Panama City, Republic of Panama.—p. 197.
- Distribution of Trypanosoma Cruzi Chagas in the Southwestern United States.* Fae D. Wood and S. F. Wood, Los Angeles.—p. 207.
- Experimental Lesions Induced in Rabbit with Acid-Fast Chromogenic Bacillus (Duval) from Human Leprosy.* J. R. Kriz, New Orleans.—p. 213.

Yellow Fever Vaccination.—Soper and Smith point out that between October 1935 and April 1936 forty-four adults were vaccinated against yellow fever in Brazil with tissue culture virus (17E) and human immune serum. The immune serum used was from pools obtained from two or more persons who had suffered attacks of yellow fever. The dose used was 0.5 cc. per kilogram of body weight. An interval of from thirty minutes to two hours elapsed between injections of the immune serum and the virus. Intracerebral injection into mice of peripheral blood, drawn daily from two men during fourteen days following vaccination, failed to reveal the presence of circulating virus. Thirty-seven of the forty-four persons vaccinated were tested for immunity one month later. Of these, only two were not immunized. One of these was subsequently vaccinated with the same tissue culture virus and immune monkey serum, and immunity developed. The use of cultivated virus and human immune serum appears to be safe and highly effective but impracticable for mass vaccination because of the difficulty in obtaining and administering the necessary amount. During the same period 234 persons were

vaccinated with the same virus and various pools of immune goat serum. Although satisfactory immunization was secured, this method cannot be recommended because of serum reactions and delayed febrile reactions with circulating virus attributed to the rapid excretion of the heterologous serum. In 1936 and 1937 a total of 795 persons were vaccinated with hyperimmune monkey serum and the same tissue culture virus. Antibodies in rhesus serum were more effective than those in goat serum. The relatively high percentage of failure to immunize encountered with this method is attributed to the use of excessive amounts of antibody, resulting in a complete inhibition of activity of the virus. A delayed reaction of unknown etiology occurring from two to eight months after vaccination, the main symptoms of which was jaundice, was reported in from 20 to 30 per cent of a series of vaccinations done with two pools of hyperimmune monkey serum.

Transmission of Jungle Yellow Fever Virus by *Aedes Aegypti*.—According to Whitman and Antunes, two strains of jungle yellow fever virus have been transmitted by the bites of *Aedes aegypti* under laboratory conditions. The M. A. J. strain has been carried through seventeen mosquito-monkey-mosquito passages and the Suarez strain through four. No difficulty has been encountered in maintaining the passages. The minimal incubation period between the infectious meal and the earliest capacity to transmit by bite in *Aedes aegypti* has been from fourteen to fifteen days when the M. A. J. strain is used. The prolonged incubation period may play a part in limiting the importation of jungle virus into towns. Of twenty-seven monkeys infected with the M. A. J. strain, thirteen of seventeen survivors either had no fever or first showed fever after the virus had practically disappeared from the blood stream. In the four remaining survivors and in the ten animals that died, the onset of fever corresponded with the period of maximal circulating virus. The delayed febrile response in nonfatal cases may not be a characteristic of jungle virus but may be related to the pathogenicity for rhesus monkeys of the particular strain of virus used, whether of urban or of jungle origin. If the human response is comparable to that of rhesus monkeys, many cases brought to town for treatment after the onset of fever would no longer be infectious for the local *Aedes aegypti*.

Annals of Surgery, Philadelphia

107: 481-640 (April) 1938

- Postanesthetic Encephalopathy Following Cyclopropane. P. W. Gebauer and F. P. Coleman, Cleveland.—p. 481.
- Severe Degeneration of the Brain Following Nitrous Oxide-Oxygen Anesthesia. J. D. O'Brien, Canton, Ohio, and A. T. Stegmann, Cleveland.—p. 486.
- Brain Abscess of Undetermined Etiology: Report of Four Cases with Recovery. J. C. Yaskin, F. C. Grant and R. A. Groff, Philadelphia.—p. 492.
- *Treatment of Hemorrhage and Traumatic Shock by Intravenous Use of Lyophile Serum. D. D. Bond and D. G. Wright, Philadelphia.—p. 500.
- Acute Appendicitis in Complete Transposition of Viscera: Report of Case with Symptoms Referable to Right Side Mechanism of Pain in Visceral Disease. F. B. Block and M. A. Michael, Philadelphia.—p. 511.
- Bacterial Flora of Acute Perforated Appendicitis with Peritonitis: Bacteriologic Study Based on 100 Cases. W. A. Altmeier, Detroit.—p. 517.
- Rare Incidence of Acute Appendicitis Resulting from External Trauma. R. H. Fowler, Newark, N. J.—p. 529.
- Surgical Consideration of Solitary Polyps of the Colon. C. W. Mayo and W. L. Butsch, Rochester, Minn.—p. 540.
- Results of Conservative Treatment of Acute Cholecystitis. G. P. Pennoyer, New York.—p. 543.
- Spontaneous Postoperative Rupture of Bile Ducts. B. Newburger, Cincinnati.—p. 558.
- Dermoid Cysts of the Mesentery. G. C. Penberthy and K. M. Brownson, Detroit.—p. 566.
- Direct Inguinal Hernia. L. S. Fallis, Detroit.—p. 572.
- Communicating Veins of Lower Leg and Operative Technic for Their Ligation. R. R. Linton, Boston.—p. 582.
- Injuries About Shoulder Joint in Children, Exclusive of Fractures of Clavicle. J. E. Sullivan, New York.—p. 594.
- Stenosing Tendovaginitis at Radial Styloid Process. H. B. Keyes, New York.—p. 602.
- *Bacterial Flora of Clean Surgical Wounds. H. R. Ives Jr. and J. W. Hirschfeld, New Haven, Conn.—p. 607.

Treatment of Hemorrhage and Shock with Lyophile Serum.—Bond and Wright used lyophile serum intravenously to treat animals that were moribund after experimental shock and hemorrhage. Thirty-one dogs were used and, for the most part, were under light ether anesthesia administered by tracheal

cannula. A few were under sodium amytal, given intraperitoneally. During periods of trauma the ether anesthesia was deepened. The experimental data suggest that solutions of lyophile serum would be useful in the treatment of clinical traumatic shock, surgical shock, severe burns and hemorrhage. However, pending further clinical experience lyophile serum should be given slowly and with caution, and pools of serum should be prepared from donors of single blood type compatible with that of the recipient.

Bacterial Flora of Clean Surgical Wounds.—In studying the bacteriology of surgical wounds and its importance in relation to the problem of wound infection, Ives and Hirschfeld made cultures of the wounds during the actual operation in thirty cases in which there was no infection. With the exception of one thoracoplasty, all the wounds were in the abdominal wall. No case was studied if there was any possibility of contamination with feces, pus, urine or bile. Positive cultures were obtained from the skin in 86 per cent at the start of the operation and in 100 per cent of the cases at the close of the operation. Their observations and those that they were able to collect from the literature justify the conclusion that well over 50 per cent of postoperative infections of wounds are caused by either *Staphylococcus aureus* or *Staphylococcus albus*. These organisms are present in the air of the operating room and on the skin of the patient. They unquestionably contaminate wounds during operations, and they may be recovered from the wounds by suitable culture methods. The incidence of infected wounds can be lowered by eliminating these bacteria from the air and skin. The methods which have been used to sterilize air in the operating room are as yet clumsy and difficult to employ but, until a satisfactory method of preventing the contamination of wounds with staphylococci from the air of the operating room is developed, wound infections will continue to occur.

Archives of Dermatology and Syphilology, Chicago

37: 549-736 (April) 1938

- Studies on Porphyria: II. Case of Porphyria Accompanied with Epidermolysis Bullosa, Hypertrichosis and Melanosis. W. J. Turner, North Little Rock, Ark., and M. E. Obermayer, Chicago.—p. 549.
- Treatment of Angioma Based on Ten Years' Experience at the Vanderbilt Clinic. G. C. Andrews, New York.—p. 573.
- Eczematous Eruptions Produced by Leaves of Trees and Bushes: V. Genner and P. Bonnevie, Copenhagen, Denmark.—p. 583.
- Leukoplakia Buccalis. F. J. Eichenlaub, Washington, D. C.—p. 590.
- Acquired Specific Hypersensitivity to Simple Chemicals: II. Cheilitis, with Especial Reference to Sensitivity to Lipstick. M. B. Sulzberger and J. Goodman, with technical assistance of L. A. Byrne and Ella D. Mallozzi, New York.—p. 597.
- LXXX. Further Studies of Relation of Pityrosporum Ovale to Seborrheic Eczema. R. L. Kile and M. F. Engman, St. Louis.—p. 616.
- *Relapse in Lupus Erythematosus After Treatment with Sodium Gold Thioculfate. J. L. Callaway, Durham, N. C., and J. H. Stokes, Philadelphia.—p. 627.
- *Cutaneous Hazards in Citrus Fruit Industry: Brief History of Citrus Fruit in Florida and in California. L. Schwartz, New York.—p. 631.
- Stigmatization. J. V. Klauder, Philadelphia.—p. 650.

Relapse in Lupus Erythematosus.—Of thirty-one patients with lupus erythematosus whom Callaway and Stokes "cured" with sodium gold thiosulfate, 75 per cent had relapses. Twenty-three patients gave a history of previous oversusceptibility to sunburn. This proved to be significant, for seventeen of the patients experiencing relapse gave a definite history of relapse following exposure to sunlight. Nervous stress and strain undoubtedly had a part in causing certain of the relapses (seven patients), particularly among high-strung patients in private practice. In these patients relapse seemed to be associated with the appearance of the rosacea complex under stress. Each patient had from one to four relapses. Patients whose involvement was extensive, with many lesions, experienced relapse more often (82 per cent) than patients with mild involvement or few lesions (57 per cent). Relapses occurred without relation to any interval of time. No relation was observed to the total or the average dose of sodium gold thiosulfate.

Cutaneous Hazards in Citrus Industry.—Schwartz lists the cutaneous hazards in the citrus fruit industry as: (1) in growing, dermatitis from fertilizers and insecticides and wounds from citrus thorns; (2) in packing, dermatitis from washing solutions and from hypersensitivity to citrus oils, and (3), in canning, dermatitis and paronychia among peelers, reamers and sectioners, because of hypersensitivity to citrus oils and juices.

No cases of dermatitis were encountered that could be attributed to the dyes used to color the oranges. Spreaders of fertilizer and handlers of insecticides should wear rubber gloves, aprons and goggles. Pickers should wear leather gloves and wrist bands. Packers, peelers, reamers and sectioners should wear rubber gloves. Packing and canning operations should be mechanized to as great an extent as possible.

Archives of Ophthalmology, Chicago

19: 487-662 (April) 1938

- Choroidal Sclerosis in Coronary Arteriosclerosis: Report of Case. M. Cohen, New York.—p. 487.
Pyretotherapy in Ophthalmology. L. Hambresin, Brussels, Belgium.—p. 497.
The Problem of Glaucoma. B. L. Gordon, Atlantic City, N. J.—p. 515.
*Intracapsular Cataract Extraction: Report of Further Series of Cases. L. F. Appleman, Philadelphia.—p. 548.
The Dominant Eye: Its Clinical Significance. W. H. Fink, Minneapolis.—p. 555.
Treatment of Conjunctivitis. P. Thygeson, New York.—p. 586.

Intracapsular Cataract Extraction.—Appleman reports his experience with intracapsular cataract extraction in 268 cases from the wards of the Wills Hospital, in 250 of which there were no complications, and in seventy-two cases from private practice. The Knapp method was used in all cases. The intracapsular method was performed in 146 cases in which there were no complications. Vision of 6/12 or better was obtained in ninety-eight cases, 6/6 in thirty-seven cases, 6/9 in thirty-eight cases and 6/12 in twenty-three cases. The classic method of operation was used in 104 cases. Vision of 6/12 or better was obtained in eighty cases. The intracapsular method was used in the seventy-two cases from private practice. Vision of 6/12 or better was obtained in sixty-three. An expulsive hemorrhage occurred in one case, with loss of the eye. Of the eighteen cases in which there were complications the intracapsular operation was performed in thirteen and was considered a failure in twelve because of various subsequent complications. The extracapsular extraction was performed in five cases and was also considered a failure because of complications. The author considers the intracapsular operation the method of choice in cases in which there are no complications because of the smoothness and rapidity of convalescence, the absence of reaction and the visual results obtained.

Archives of Otolaryngology, Chicago

27: 261-394 (March) 1938

- Treatment of Simple Chronic Laryngitis. L. H. Clerf, Philadelphia.—p. 261.
Relation of Irritation in Region of Paranasal Sinuses to Certain Vaso-motor Changes: Experimental Study. O. Larsell, J. F. Barnes and R. A. Fenton, Portland, Ore.—p. 266.
Unusual Combination of Ocular Paralysis Following Radical Operation on Antrum. R. C. Grove, New York.—p. 275.
Otic Capsule and Membranous Labyrinth of the 29 Mm. (Crown-Rump) Human Embryo. J. Martin and B. J. Anson, Chicago.—p. 279.
Interpretation of Results of Tuning Fork Test for Deafness. F. A. H. Johnson, Washington, D. C.—p. 304.
Nasopharyngeal Fibroma: Report of Case in Which Surgical Approach Was Employed. R. F. Nelson, Oakland, Calif.—p. 313.
Meningitis Due to Staphylococcus Aureus Haemolyticus: Report of Recovery. M. Fritz and W. Hollister, Durham, N. C.—p. 317.
Postoperative Report of Paranasal Sinuses: Experimental Studies and Their Practical Application. M. A. Glatt, Chicago.—p. 323.
False Ankylosis of the Mandible. J. H. Childrey, San Francisco.—p. 339.
Peroral Endoscopy. L. H. Clerf and F. J. Putney, Philadelphia.—p. 347.

California and Western Medicine, San Francisco

48: 233-304 (April) 1938

- Hyperparathyroidism, with Special Reference to Parathyroid Adenoma. W. W. Washburn, San Francisco.—p. 240.
Acute Anterior Poliomyelitis: Possibility of Spread as a Result of Direct Personal Contact: Study of 385 Contacts. J. C. Geiger, San Francisco.—p. 245.
Functional Indigestion. A. E. Kochler, Santa Barbara.—p. 247.
Endocrines and Behavior in Puberty. Clara H. Spalding, Richmond.—p. 251.
Abdominal Abscesses: Their Treatment. T. O. Burger and H. C. Torbert, San Diego.—p. 252.
Critical Decisions in Cataract Surgery. H. F. Whalman, Los Angeles.—p. 255.
As a Pharmacist Views the Proposed California Humane Pound Law. J. J. Boyle, Los Angeles.—p. 257.
Proposed California Humane Pound Law: How It Would Affect Medicine and Pharmacology. C. H. Thienes, Los Angeles.—p. 258.
Federal and State Narcotic Laws: Cautions for Physicians. W. R. Molony Sr., Los Angeles.—p. 261.
Federal and California State Narcotic Laws: Cautions from the Standpoint of a Pharmacist. F. Homer, Beverly Hills.—p. 262.

Canadian Medical Association Journal, Montreal

38: 317-420 (April) 1938

- Reconstruction of Valves of the Heart. G. Murray, F. R. Wilkinson and R. MacKenzie, Toronto.—p. 317.
Urinary Obstruction in Children. D. W. MacKenzie and M. Ratner, Montreal.—p. 320.
Unusual Malignant Conditions of the Skin. B. W. MacDonald, Ottawa, Ont.—p. 328.
Present Status of Intravenous Administration of Pentothal Sodium in Institutional and Private Practice. R. C. Adams, Rochester, Minn.—p. 330.
Fetal Respiration and Its Relation to Abnormalities of the Newborn. F. F. Snyder and M. Rosenfeld, Baltimore.—p. 338.
The Fatigue Syndrome. G. K. Wharton, London, Ont.—p. 339.
Vesico-Intestinal Fistula. E. R. Hall, Vancouver, B. C., and N. D. Hall, Phoenix, Ariz.—p. 343.
Volvulus of Cecum: Report of Two Cases. A. J. Grace, London, Ont.—p. 346.
Acariasis of Urinary Tract Caused by Histogaster. A. E. McCulloch, Toronto.—p. 351.
*Mandelic Acid in Treatment of Pyuria. Pearl Summerfeldt and A. Brown, Toronto.—p. 352.
*The Menace of Sodium Bicarbonate—Pleionexy. J. K. Latchford, Toronto.—p. 356.
Silk Technic: Its Role in Wound Healing. G. Miller and J. C. Luke, Montreal.—p. 358.
Pruritus Gingivae. L. P. Strean, Montreal.—p. 362.
Positive Wassermann Reaction in Ascitic Fluid: Report of Two Cases. N. B. Gwyn, Toronto.—p. 363.
Pneumococcus Typing in the Public Health Laboratory. W. B. McClure, Toronto.—p. 365.
Radiosensitivity of Benign Skin Conditions. C. M. Henry, Regina, Sask.—p. 371.
Childhood Tuberculosis. A. M. Jeffrey, Ottawa, Ont.—p. 373.
Examination of Mouths of Eskimos in the Canadian Eastern Arctic. C. S. McEuen, Montreal.—p. 374.

Mandelic Acid in Pyuria.—During the last seventeen months Summerfeldt and Brown treated fifty-two cases of infection of the urinary tract with sodium or ammonium salt of mandelic acid. Of these, thirty-one cases were acute pyuria and twenty-one were persistent pyuria. The organisms present in the urine were *Bacillus coli*, except in six cases in which they were *Bacillus paracoli*, two cases in which they were *Staphylococcus aureus* and in two cases dysentery, one of which was a *Bacillus flexneri*. Not one of these organisms was resistant to treatment. Of the forty patients treated with sodium mandelate and ammonium chloride the urine of 50 per cent was free of pus and bacteria in from one to seven days after the reaction of the urine was more acid than a pH of 5.8. In 38 per cent sterile urine was obtained in from eight to thirty-four days, while in 12 per cent there was no response to treatment. Of the twelve patients treated with ammonium mandelate, 58 per cent responded to the drug within seven days, while 42 per cent required from nine to twenty-eight days. The patients with acute pyuria responded to treatment more quickly than did the persistent group. Twenty cases were observed for from one to sixteen months. There was a recurrence of the pyuria in four cases, and of bacilluria in three cases. In thirteen cases there was no recurrence of either the bacilluria or the pyuria.

Menace of Sodium Bicarbonate.—According to Latchford, instances of tetany have been reported following the use of sodium bicarbonate. It is difficult to understand the danger of such a simple, common substance. Yet the danger is, as with carbon monoxide, interference with the discharge of oxygen by the circulating hemoglobin. Barcroft showed that sodium bicarbonate was highly pleionectic in its action on hemoglobin. Pleionexy is that condition of the circulating hemoglobin in which it holds on more firmly to its gathered oxygen than in the normal condition (mesonexy) and so gives off less oxygen to the tissues than normally. When pleionexy is present, whether induced by sodium bicarbonate, dibasic sodium phosphate or diminished carbon dioxide content, the tissues fail to receive enough oxygen for their needs and tend to fail in proportion to their oxygen requirements and the degree of the lag of oxygen supply behind oxygen demand. With the onset of pleionexy occurs the development of the anoxic condition, which the organism may or may not survive. Not all degrees of anoxemia are dangerous, but all tend to produce tissue breakdown. Failure is inevitable if the tissues of the individual cannot endure the anoxic breakdown. Sodium bicarbonate shifts the disso-

ciation curve of hemoglobin to the left, decreasing oxygen supply to the tissues, producing pleionexy, which as a result of treatment does not appear justifiable, owing to the fact that immediate interference with oxygen supply follows its absorption.

Connecticut State Medical Society Journal, Hartford

2: 163-206 (April) 1938

- Fracture Disabilities of Forearm. A. Steindler, Iowa City.—p. 163.
Treatment and Prevention of Pneumonia: Responsibility of the Doctor. J. A. Wentworth, Hartford.—p. 170.
Treatment of Early Syphilis. J. H. Stokes, Philadelphia.—p. 172.
Obstetrics in the United States: Today and Tomorrow. R. M. Lewis, New Haven.—p. 174.
Newer Anesthetic Agents and Methods Used in Present Day Practice. R. M. Tovell, Hartford.—p. 177.
Ovarian Pregnancy. R. A. Gandy, Stamford.—p. 182.
Annual Congress on Medical Education and Licensure. C. J. Bartlett, New Haven.—p. 188.

Endocrinology, Los Angeles

22: 411-520 (April) 1938

- Syndrome Characterized by Osteitis Fibrosa Disseminata, Areas of Pigmentation and a Gonadal Dysfunction: Further Observations Including Report of Two More Cases. F. Albright, B. Scoville and H. W. Sulkowitch, Boston.—p. 411.
Clinical Results of Anterior Pituitary Therapy in Children: Comparison of Value of Oral and Hypodermic Preparations. M. Molitch and S. Poliakoff, Philadelphia.—p. 422.
*Prolactin: Its Effect on Secretion of Woman's Milk. J. R. Ross, Toronto.—p. 429.
Biologic Effects of Thymus Implantation in Thymectomized Rats: Correction of Retardation in Growth and Development in Successive Generations of Thymectomized Rats by Means of Frequent Homologous Thymus Implants. N. H. Einhorn, Philadelphia.—p. 435.
Negative Effects of Endocrine Extracts on Thymus of the White Rat. F. N. Low, Ithaca, N. Y.—p. 443.
Study of Natural Growth and Ossification in Hereditary Dwarf Mice. E. Boettiger and C. M. Osborn, Cambridge, Mass.—p. 447.
Autotransplantation and Regeneration of Adrenal Gland. D. J. Ingle and G. M. Higgins, Rochester, Minn.—p. 458.
Work Performance of Untreated Hypophysectomized Rats. D. J. Ingle, Rochester, Minn.—p. 465.
Some Effects of Adrenalectomy in Fowls. E. H. Herrick and O. Torstveit, Manhattan, Kan.—p. 469.
Free and Total Cholesterol Content of Whole Blood and Plasma as Related to Experimental Variations in Thyroid Activity. L. H. Schmidt and Hettie B. Hughes, Cincinnati.—p. 474.
Purification of Anterior Pituitary Growth Hormone by Fractionation with Ammonium Sulfate. H. M. Evans, N. Uyei, Q. R. Bartz and Miriam E. Simpson, Berkeley, Calif.—p. 483.
Hyperglycemia Without Glycosuria. C. F. Davidson, Seattle.—p. 493.

Effect of Prolactin on Secretion of Milk.—Ross gave prolactin to nursing mothers so that he could observe its efficacy on the secretion of milk. The breast milk was pumped by an Abt electric breast pump and the amount obtained was measured carefully. Infants were selected who did not show signs of weight increase by the fifth day. Breast milk was then pumped from the mother and the total twenty-four hour secretion was measured for one or usually two days. Nine mothers received two intramuscular injections of 2 cc. of prolactin (80 Riddle units) and on the second day two intramuscular injections of 3 cc. and twelve patients were given a similar volume of prolactin containing 100 Riddle units per cubic centimeter. A group of ten patients acted as controls and received a similar amount of saline solution. The breast milk was pumped at intervals of four hours until the patient was discharged. No untoward reactions were noted with the less concentrated prolactin. With the more concentrated prolactin, however, reactions consisting of redness and induration varying in diameter from 2 to 15 cm. developed in 83 per cent of the cases. These cleared up in from two to three days. There was also a rise in temperature of from 100 to 102 F. in all but one case after the injections but it returned to normal in from two to six days. The higher concentration of prolactin administered increased slightly the secretion of breast milk during the remainder of the patient's stay in the hospital. Of much more significance, however, was the fact that seven of eleven patients receiving this higher concentration of prolactin, observed after discharge from the hospital, nursed their infants completely, whereas of eight such observed patients receiving the lower concentration of prolactin only two were able to nurse their infants completely. Of the eight controls, only one nursed her infant completely.

Illinois Medical Journal, Chicago

73: 265-356 (April) 1938

- Community of Interest Among the Professions. C. B. Reed, Chicago.—p. 309.
The Individual in a Free Society. S. B. Pettengill, South Bend, Ind.—p. 313.
Treatment of Endocrine Disorders. J. H. Hutton, Chicago.—p. 321.
Enteritis. J. A. Mathis, Pinckneyville.—p. 325.
Fundamentals of Water Balance in Surgery. E. Bechtold, Belleville.—p. 327.
Ruptured Aneurysm of Left Gluteal Artery with Operation. W. I. Lewis, Herrin.—p. 331.
Cysts of the Mesentery: Review of Literature and Report of Case. W. E. Keesey, Chicago.—p. 333.
*Pulmonary Changes in Rheumatic Fever. P. J. Melnick, Decatur.—p. 336.
The Problem of Rheumatism. J. G. Finder, Chicago.—p. 340.
Importance of Preemployment and Periodic Medical Examinations: Summary of Medical Findings in 500 Cases. R. C. Page, Chicago.—p. 343.
Development of a Full Time School Health Program in a City of 125,000. C. H. Benning, Peoria.—p. 348.

Pulmonary Changes in Rheumatic Fever.—Melnick reported necropsies on six patients with acute rheumatic fever. They had complained of joint pains, fever and dyspnea and palpitation. The physical signs were sufficiently clear so that a correct clinical diagnosis of acute rheumatic fever could be made. The postmortem observations, in all the cases, were those of acute rheumatic fever, with verrucous eruptions on one or more valves and Aschoff nodules in the myocardium. In four cases there was no fibroplastic deformity of the heart valves. The consistency of the lungs in all the cases was boggy or rubbery, yet the surfaces that were cut were dry; that is, there was no fluid in the air sacs. In addition, in three cases the surfaces that were cut revealed wide bands which were redder and firmer, having the consistency of spleen tissue; i. e., focal areas of "splenization." The essential microscopic changes were those of an intense hyperemia and a proliferation of the septal cells. The alveolar walls were greatly thickened up to ten or more times the normal. The capillaries in the alveolar walls showed an extreme dilatation, often bulging into the alveolar spaces. There was an increased cellularity of the alveolar wall. The process was seen especially intensified in the focal areas of splenization in three cases. The smallest branches of the pulmonary artery showed changes which may be significant. The endothelium of these vessels was much swollen, cuboidal and even columnar, and vacuolated. No bacteria could be found in any of these lungs except in one case complicated by a confluent bronchopneumonia. The process resembles an allergic reaction. The concept that rheumatism has certain allergic aspects has recently come into greater prominence. In rheumatism the Aschoff nodule in the myocardium is probably an allergic granuloma, according to Klinge and others. Similar rheumatic nodules have been found in almost every organ in the body. The process seen in the lungs in acute cases of rheumatic fever is probably one of the hyperergic mechanisms that occur in this disease.

Indiana State Medical Assn. Journal, Indianapolis

31: 161-218 (April) 1938

- Diagnosis and Treatment of Diphtheria. E. R. Carlo, Fort Wayne.—p. 161.
Postdiphtheritic Complications. R. A. Craig, Kokomo.—p. 163.
Diphtheria Prevention and the American Legion. H. J. Norton, Columbus.—p. 165.
*Endometriosis. A. Hurley, Muncie.—p. 167.
Study of Appendicitis. J. M. Leffel and H. S. Leonard, Indianapolis.—p. 169.
Carrel-Dakin Treatment of Open Wounds. J. C. Donchess, Gary.—p. 173.
The Present-Day Crisis in Medical Thought. W. D. Inlow, Shelbyville.—p. 178.

Endometriosis.—In a review of 507 consecutive pelvic laparotomies done by Hurley and his senior associate during three years, endometriosis was found in forty-nine cases. In all except three the entire disability was produced by the endometriosis. All were proved to be endometriosis by microscopic examination. Ectopic endometrium can be found in many locations. It is best classified as internal or external endometriosis. The progress or retrogression of endometriosis depends on the presence or absence of hormone stimulation from the ovary. Two methods of treatment are available. Surgical removal of the growth when possible is to be desired in all large lesions and in all patients less than 40 years of age. In patients who

have extensive involvement of both ovaries, a small amount of ovarian tissue can usually be spared regardless of how extensive the growth has become. In cases in which small amounts of ovarian tissue have been saved there have been no recurrences up to the present time. If the peritoneum and intestine and pelvic organs are extensively involved, resection of most or all ovarian tissue will effect a retrogression of the lesions to such an extent that almost complete symptomatic relief will occur. Only adhesions will remain if this procedure is carried out. Roentgen therapy is indicated only in patients more than 40 years of age, with lesions that are not large and in whom one feels certain that the diagnosis of endometriosis is correct. Internal adenomyosis or endometriosis of the wall of the uterus is not helped by curettage.

Journal of Biological Chemistry, Baltimore

123: 1-374 (March) 1938. Partial Index

- Electrophoresis of Posterior Pituitary Gland Preparations. V. du Vigneaud, G. W. Irving Jr., Helen M. Dyer and R. R. Sealock, Washington, D. C.—p. 45.
- Vitamin A and Tumor Mitochondria. A. Goerner and M. Margaret Goerner, Brooklyn.—p. 57.
- Reduction of Aminosorbitol Hydrochloride with Hydriodic Acid. P. A. Levene and C. C. Christman, New York.—p. 77.
- Reduction of Glucosaminic Acid with Hydrogen Iodide in Glacial Acetic Acid. P. A. Levene and C. C. Christman, New York.—p. 83.
- Plasma Protein Given by Vein and Its Influence on Body Metabolism. F. S. Daft, Frieda S. Robschtein-Robbins and G. H. Whipple, Rochester, N. Y.—p. 87.
- Protein Metabolism, Protein Interchange and Utilization in Phlorhizinized Dogs. J. W. Howland and W. B. Hawkins, Rochester, N. Y.—p. 99.
- Isolation of Creatinine from Serum Ultrafiltrates. O. H. Gaebler and L. D. Abbott Jr., Detroit.—p. 119.
- Isolation and Identification of Anti-Black Tongue Factor. C. A. Elvehjem, R. J. Madden, F. M. Strong and D. W. Woolley, Madison, Wis.—p. 137.
- Analysis of Calcium in Blood and Other Biologic Material by Titration with Ceric Sulfate. C. E. Larson and D. M. Greenberg, Berkeley, Calif.—p. 199.
- Studies on Biologic Oxidations: X. Oxidation of Unsaturated Fatty Acids with Blood Hemin and Hemochromogens as Catalysts. E. S. G. Barron and C. M. Lyman, Chicago.—p. 229.
- Effect of Jaundiced Blood on Normal Dogs, with Especial Reference to Serum Phosphatase. S. Freeman and Y. P. Chen, Chicago.—p. 239.
- Metabolism of Pyruvic Acid in Vitamin B₁ Deficiency and in Inanition. M. A. Lipschitz, V. R. Potter and C. A. Elvehjem, Madison, Wis.—p. 267.
- Buffer Intensities of Milk and Milk Constituents: III. Buffer Action of Calcium Citrate. E. O. Whittier, Washington, D. C.—p. 283.
- Effect of Growth on Distribution of Water and Electrolytes in Brain, Liver and Muscle. H. Yarnet and D. C. Darrow, New Haven, Conn.—p. 295.

Journal of Experimental Medicine, New York

67: 495-658 (April) 1938

- Some Effects of Formaldehyde on Horse Antipneumococcus Serum and Diphtheria Antitoxin and Their Significance for Theory of Antigen-The Degree of Compensatory Renal Hypertrophy Following Unilateral Nephrectomy II. Influence of Protein Intake. Lois L. MacKay, San Diego, Calif.; T. Addis, San Francisco, and E. M. MacKay, San Diego, Calif.—p. 515.
- Antibody Aggregation. H. Eagle, Washington, D. C.—p. 495.
- Observations on Pathologic Changes Following Experimental Hypertension Produced by Constriction of Renal Artery. C. G. Child, New York.—p. 521.
- Evidence of Active Immunity to Experimental Poliomyelitis Obtained by Intranasal Route in Macacus Rhesus. S. D. Kramer, L. H. Grossman and G. C. Parker, Brooklyn.—p. 529.
- Chemical Studies on Bacterial Agglutination: IV. Quantitative Data on Pneumococcus R (Dawson S)-Anti-R (S) Systems. M. Heideberger and E. A. Kabat, New York.—p. 545.
- Course of Virus Induced Rabbit Papillomas as Determined by Virus, Cells and Host. J. G. Kidd, New York.—p. 551.
- Study of Macrophage Reaction in Pulmonary Lesions of Dogs with Experimental Pneumococcus Lobar Pneumonia. O. H. Robertson and C. G. Loosli, Chicago.—p. 575.
- Local Recovery in Experimental Pneumococcus Lobar Pneumonia in Dog. O. H. Robertson and L. T. Coggeshall, Chicago.—p. 597.
- "Japanese B Encephalitis Virus: Its Differentiation from St. Louis Encephalitis Virus and Relationship to Louping Ill Virus. L. T. Webster, New York.—p. 609.
- Influence of Inflammation on Absorption of Substances of Varied Diffusibility. Rose G. Miller, New York.—p. 619.
- Stable Hemolysin-Leukocidin and Its Crystalline Derivative Isolated from Beta Hemolytic Streptococci. E. J. Czarnetzky, Isabel M. Morgan and S. Mudd, Philadelphia.—p. 643.

Differentiation of Encephalitis Viruses.—Webster states that poliomyelitis, Japanese B encephalitis, Australian X disease and St. Louis encephalitis have features in common but are distinguishable by laboratory tests. Outbreaks of each are frequent and limited chiefly to hot weather. Each may be recog-

nized by testing serums of convalescents for specific neutralizing properties against one of these virus agents or by obtaining virus from the cerebral tissue of fatal cases and testing its virulence for mice, monkeys and sheep and its neutralization in specific antisera. The sheep virus is probably infectious for man. Louping ill virus has been related to the virus associated with X disease of children in Australia and now has proved similar to the newly discovered Japanese B encephalitis virus. Laboratory tests on susceptible animals indicate clearly that the most vulnerable port for the experimental introduction of these viruses is the nasal mucosa: this is the route of choice in mice for the St. Louis virus, in mice, monkeys and sheep for the Japanese and louping ill viruses and in monkeys for the poliomyelitis virus. There is also evidence that spontaneous louping ill may occur both in man and in mice through the nasal mucosa. But contact experiments to induce spontaneous transfer of St. Louis, Japanese B and poliomyelitis infections among susceptible laboratory animals have failed and it is difficult or impossible to detect the virus in the upper part of the respiratory tract of the diseased individual. Subcutaneous injections of Japanese B and louping ill viruses in mice and of poliomyelitis virus in monkeys and possibly in man may also induce disease. Reports state that in nature louping ill infection of sheep takes place subcutaneously by the bite of an insect. Experiments to detect virus in the blood of individuals following natural or experimental infection are either positive for brief periods only (louping ill and Japanese B viruses) or are completely negative (poliomyelitis and St. Louis viruses). Hence there is evidence for and against both the upper respiratory and subcutaneous routes of transmission of these infections and the question remains perplexing.

Journal Industrial Hygiene & Toxicology, Baltimore

20: 191-268 (March) 1938

- Clinical and Neuropathologic Aspects of Electrical Injuries. L. Alexander, Boston.—p. 191.
- *Skin Conditions Resulting from Exposure to Certain Chlorinated Hydrocarbons. May R. Mayers and Mabel G. Silverberg, New York.—p. 244.
- Electrostatic Dust Weight Sampler. E. C. Barnes and G. W. Penney, East Pittsburgh, Pa.—p. 259.

Cutaneous Eruptions from Exposure to Hydrocarbons.—Because of the potential hazard of acneform eruptions in workers exposed to chlorinated hydrocarbons used in manufacturing, Mayers and Silverberg made a survey of twenty-two industrial plants using such materials. Three of these plants made insulated wire and the remainder made electrical condensers. The eruption, which is characterized by pustules, papules and comedones, may or may not become disabling. It usually occurs within the first few months of employment. The incidence of the acneform eruption appears to be higher in the summer than in the winter. The acneform eruption differs from the acne commonly found among adolescents in the following important respects: 1. There is severe pruritus, which seldom accompanies acne vulgaris. 2. Acne is associated with a dermatitis venenata or a paronychia of the fingers, especially the index fingers. 3. Comedones are far more numerous, more closely crowded together to form patches. 4. The distribution is along the exterior surfaces of the arms and especially around the elbows. 5. The condition may be transferred to other members of the family by contact with the skin and clothing, when these have a coating of the chlornaphthalene on them. The eruption may in severe cases involve the deeper layers of the skin and result in permanent scarring. In severe cases there is a tendency to secondary infection, especially when there is a coexisting pruritus and the worker scratches the lesions. Attention to adequate local and general ventilation, personal hygiene on the part of the workers and adequate intelligent medical supervision will effectively eliminate the hazard. Fumes and vapors should be exhausted laterally at their source, the velocity of air being maintained at 1,000 feet per minute. Employers should supply workers with highly starched uniforms, underwear, caps and gloves. These should be laundered every day. Two lockers should be provided, one for street clothes and the other for uniforms. Washing up before lunch and before leaving work at night should be done under supervision. Since the chlorinated naphthalenes are not soluble in water, the waxlike film which is deposited on the skin should first be removed with cold cream,

in which it dissolves. Workers should then wash thoroughly with warm water and a mild soap. A shower before leaving work is desirable. All workers should apply a protective lotion to all exposed parts of the body before starting work. They should be encouraged to report promptly any evidence of a cutaneous eruption or of general ill health.

Journal-Lancet, Minneapolis

58:155-206 (April) 1938

- Tuberculosis and the Physician. K. Emerson, New York.—p. 155.
Twentieth Century Case-Finding. H. R. Edwards, New York.—p. 156.
Tuberculosis Among Older Age Groups. F. L. Jennings, Oak Terrace, Minn.—p. 160.
Experiences with New Approach to Tuberculosis Case-Finding. B. H. Douglas, H. F. Vaughan and G. E. Harmon, Detroit.—p. 163.
The Management of Tuberculous Pleural Effusions. G. A. Dodds, San Haven, N. D.—p. 165.
Rest and Collapse Therapy in Treatment of Pulmonary Tuberculosis. E. W. Hayes, Monrovia, Calif.—p. 169.
Tuberculosis Work in South Dakota. J. V. Sherwood, Sanator, S. D.—p. 172.
Antituberculosis Work at the Flandreau Indian School. A. S. Rider, Flandreau, S. D.—p. 175.
Reminiscences of Tuberculosis Control Work in Montana. C. E. K. Vidal, Troy, Mont.—p. 178.
Tuberculosis Case-Finding Program for the Smaller College. C. E. Lyght, Northfield, Minn.—p. 180.
The History and Progress of Tuberculosis Eradication Among Cattle. J. R. Mohler, Washington, D. C.—p. 183.
*Induced Pneumoperitoneum in Treatment of Pulmonary Tuberculosis: Review of 200 Cases at Olive View Sanatorium. E. S. Bennett, Olive View, Calif.—p. 187.
Survey of Tuberculosis Control Work in South Dakota. B. A. Dyar and R. H. Wilcox, Pierre, S. D.—p. 190.
Newer Knowledge of Eye Health. W. L. Benedict, Rochester, Minn.—p. 191.
Iodine in Experimental Tuberculosis. L. W. Smith, Philadelphia.—p. 195.

Pneumoperitoneum in Pulmonary Tuberculosis.—Bennett states that during the last two years pneumoperitoneum has been induced in 200 patients. Thirty-two of these patients have died since, after an average of about eight months of treatment. Necropsies were performed on fifteen. In view of the advanced stage of the disease in most of these patients this case fatality rate cannot condemn pneumoperitoneum, especially since the necropsies did not indicate that this was a factor responsible for death in any case but one, in which instance it accelerated what was otherwise an apparently certain death. Clinically and symptomatically, improvement was noted in more than half of the patients treated. A careful analysis was made of the cavities in 120 of these cases; 90 per cent showed cavitation with a total of 211 cavities. Of the 211 cavities, 22 per cent of those in the upper third, 33 per cent of those in the middle third and 31 per cent of those in the lower third could not be visualized roentgenologically after pneumoperitoneum had been well established. Reduction in the size of cavities was noted in an additional 12 per cent of those in the middle third. The remainder of the cavities showed no change or became larger, or more recent roentgenograms were not available because of the short duration of the treatment or the departure of the patients. In eleven patients showing infiltrative lesions without cavitation, four showed marked clearing of infiltration under pneumoperitoneum. Fifteen of the 200 patients after a period of artificial pneumoperitoneum underwent thoracoplasty or extrapleural pneumothorax who previous to the addition of pneumoperitoneum were in too poor condition or had too much contralateral disease to withstand these more radical operations. Pneumoperitoneum did not prove particularly effective when used in an emergency to control hemorrhage. A change from a previously positive to a negative sputum, following the establishment of pneumoperitoneum, occurred in fifty-seven patients out of the 173 whose sputum had been positive prior to the institution of this form of treatment.

Michigan State Medical Society Journal, Lansing

37:297-384 (April) 1938

- The Medical Profession versus Syphilis. T. Parran, Washington, D. C.—p. 315.
A Charge to Keep. M. Lick, Erie, Pa.—p. 319.
Neuropathology as a Science: Report of First Hundred Neuropathologic Specimens in Detroit. G. Steiner, Detroit.—p. 326.
Mental Hygiene Clinic and the School. L. H. Bartemeier, Detroit.—p. 331.
Medical Press Relations. L. C. Salter, Detroit.—p. 335.
Use of Sulfanilamide in Treatment of Gonorrhea: Report of Results in 175 Cases. G. Sewell, Detroit.—p. 339.

Military Surgeon, Washington, D. C.

82:289-384 (April) 1938

- Organization and Activities of the Medical Department of the Army: Importance of Medicine in National Defense. C. R. Reynolds.—p. 289.
Emergency Plastic Surgery. H. L. Updegraff.—p. 315.
Sclerodactylia: Report of Case. S. Hoechstetter.—p. 321.
Report on Ninth International Congress of Military Medicine and Pharmacy: The Use of Colorimetric Methods of Analysis in Laboratories. W. S. Bainbridge.—p. 324.
Edentates in the Armies—Definition—Treatment—Prosthesis—Military Employment in Times of Peace and War. Official Reports.—p. 330.
The Italian Medical Service During the Campaign in Ethiopia. P. Huard.—p. 337.
The Medical Specialists Units, United States Naval Reserve. A. Soiland.—p. 347.
Report of Case of Myasthenia Gravis Associated with Thymoma. G. F. Peer and C. J. Farinacci.—p. 350.
Children and Adequate National Defense. S. A. Cohen.—p. 355.
Fracture of Shaft of the Femur. R. R. Haley.—p. 358.

Minnesota Medicine, St. Paul

21:225-296 (April) 1938

- *Importance of Immobilization and Posture in Treatment of Acute Infections of Extremities. O. H. Wangenstein, Minneapolis.—p. 225.
Immediate and Subsequent Treatment of Burns. R. F. Hedin, Chicago.—p. 229.
Errors in Diagnosis and Treatment of Hyperthyroidism. A. S. Jackson, Madison, Wis.—p. 236.
Some Attempted Legislative Solutions to the Problems of Medical Care. T. V. McDavitt, Chicago.—p. 240.
Food Sensitivity Simulating Gastrointestinal Disease. C. I. Krantz, Duluth.—p. 245.
Dangers of Late Diagnosis of Intestinal Diseases. J. A. Bargen, Rochester.—p. 248.
Comparative Values of Injection and Surgical Treatment of Hernia. G. Earl, St. Paul.—p. 250.
Present Status of Infestation of Fishes of Long Lake, Ely, Minn., with Larvae of *Diphyllbothrium Latum*. H. E. Essex, Rochester.—p. 254.
Ovarian Tumors Among Young Girls. C. W. Mayo and W. L. Butsch, Rochester.—p. 256.
Coexisting Pernicious Anemia and Chronic Pulmonary Tuberculosis. D. V. Sharp, Oak Terrace.—p. 258.
Central Fractures of the Neck of the Femur Treated by Internal Fixation. W. C. Campbell, Memphis, Tenn.—p. 260.

Immobilization and Posture in Infections of Extremities.—During the last two years, Wangenstein has treated a variety of acute infections by immobilization in windowed (for drainage) plaster casts. Immobilization in plaster reduces movement to a minimum. Immobilization by splints or traction does not approximate the security and rigidity lent by adequate immobilization in plaster. The lymphatics ramify in the fascias overlying the muscles. The importance of keeping muscles as quiet as is physically possible in phlegmonous inflammations is therefore understandable. Elevation of the infected part is a valuable addition to this mode of treatment—particularly when the inflammation concerns the soft tissues. Increased relief of pain and quicker reduction of swelling are obtained.

Missouri State Medical Assn. Journal, St. Louis

35:115-158 (April) 1938

- Acute Hemolytic Streptococcal Gangrene of Skin and Subcutaneous Tissue. J. G. Probst and C. J. Heifetz, St. Louis.—p. 115.
Necrosis from Hypodermoclysis. B. S. Pruett, St. Louis.—p. 118.
Use of Protamine Zinc Insulin. F. Neuhoft, St. Louis.—p. 119.
Collapse in Pneumonia. D. G. Stine, Columbia.—p. 121.
Intravenous Therapy. J. S. Lumdy, A. E. Osterberg and E. B. Tuohy, Rochester, Minn.—p. 124.
Cured Diabetes? B. Y. Glassberg, St. Louis.—p. 128.
Industrial Tuberculosis: A Public Health Factor. H. I. Spector, St. Louis.—p. 131.
Diagnosis and Treatment of Cholelithiasis and Extrahepatic Ductile Stones. P. F. Hunt, Kansas City.—p. 133.
Study of Medical Care. R. G. Leland, Chicago.—p. 137.

Nebraska State Medical Journal, Lincoln

23:121-160 (April) 1938

- Amebiasis: Study of 100 Cases. G. W. Covey, F. L. Rogers and G. R. Underwood, Lincoln.—p. 123.
Congenital Hypertrophic Pyloric Stenosis: Review of Forty-One Operative Cases. A. Brown, Omaha.—p. 128.
Puerperal Infection. P. Findley, Omaha.—p. 130.
Pregnancy and Rheumatic (Valvular) Heart Disease. F. W. Niehaus, Omaha.—p. 133.
Ovarian Cysts: Some Surgical Aspects. B. C. Russum, Omaha.—p. 135.
Evaluation of Scoliosis Treatment. W. R. Hamsa, Omaha.—p. 137.
Intradermal Immunization. Helen Wyandt, M. Bayliss, J. P. Tellman and M. F. Gunderson, Omaha.—p. 140.

New England Journal of Medicine, Boston

218: 411-452 (March 10) 1938

- The Massachusetts Pneumonia Program. H. D. Chadwick, Boston.—p. 411.
Physical and Clinical Observations on Use of Million-Volt X-Rays. R. Dresser and J. Spencer, Boston.—p. 415.
Intestinal Tuberculosis. G. A. Moore, Brockton, Mass.—p. 418.
Surgical Treatment of Pain. E. C. Cutler, Boston.—p. 422.
Progress in Neurology in 1936. J. Loman, Boston.—p. 426.

218: 453-502 (March 17) 1938

- *Diagnosis, Treatment and End Results in Gonococcal Arthritis: Study of Seventy Cases. W. W. Spink and C. S. Keefer, Boston.—p. 453.
Gallstone Ileus. F. G. Balch Jr., Boston.—p. 457.
Progress in Tuberculosis, 1936-1937. J. B. Hawes 2d and M. J. Stone, Boston.—p. 479.

218: 503-548 (March 24) 1938

- Sulfanilamide: A Review. M. A. Schnitker, Boston.—p. 503.
Dissecting Aneurysm of the Aorta: Two Cases with Unusual Features. S. Weiss, Boston.—p. 512.
A Challenge to Medicine. R. G. Leland, Chicago.—p. 518.
Primary Thrombosis of Axillary Vein. B. I. Goldberg and J. A. Foley, Boston.—p. 521.
Botulism in Massachusetts: Report of Two Cases. H. Rosen and N. Gordon, Boston.—p. 524.
Anaphylaxis to Sodium Morrhuate Following Injection Treatment of Internal Hemorrhoids. N. J. Simmons, Boston.—p. 527.

218: 549-586 (March 31) 1938

- Wringer Arm: Report of Twenty-Six Cases. D. W. MacCollum, Boston.—p. 549.
Apical Chest Lead as Chief Aid in Diagnosis of Coronary Occlusion. H. B. Sprague and S. McGinn, Boston.—p. 555.
Significance of Weakly Positive Aschheim-Zondek Test. B. Tenney Jr. and F. Parker Jr., Boston.—p. 561.
Neurologic Manifestations of Subacute Bacterial Endocarditis. C. M. Krinsky and H. H. Merritt, Boston.—p. 563.

218: 587-626 (April 7) 1938

- Acute Postoperative Duodenal Fistula: Report of Twelve Cases. M. K. Bartlett and W. H. Lowell, Boston.—p. 587.
Thrombophlebitis in the Legs. J. Homans, Boston.—p. 594.
Benign Stricture of Esophagus Complicating Duodenal Ulcer. E. B. Benedict and E. M. Daland, Boston.—p. 599.
Hyperventilation Tetany. R. Harwood, Boston.—p. 602.

Gonococcal Arthritis.—Spink and Keefer treated twenty-six of their patients (group 1) medically. In group 2, twenty-four patients had sufficient evidence of an effusion into one or more joint spaces to warrant aspiration of the synovial fluid in addition to medical therapy and group 3 was composed of twenty patients whose joints were aspirated and also opened and followed by lavage. Two of the group 1 patients died. On leaving the hospital (average stay fifty days), eighteen patients were completely free of all joint symptoms, with no limitation of motion and no x-ray evidence of destruction of the joints; of the remaining six, one ultimately had a complete bony ankylosis of a wrist joint, one had x-ray evidence of destruction of one metatarsal joint but no limitation of function, two had a partial ankylosis of the wrist joints and two had a residual soreness of the joints of the lower extremities, which disappeared after several weeks. The average stay in the hospital in group 2 was fifty-three days. The aspirated synovial fluid from twenty-two of the patients was sterile. Infected fluid was aspirated from the shoulder joint of one patient and from the wrist joint of another. None of the group died. Follow-up observations on these patients revealed that only one had a recurrence of joint symptoms. This followed a second attack of gonococcal urethritis. Fourteen patients had complete recovery of the function of their joints with no x-ray evidence of their destruction. Two patients had bony ankylosis of a wrist joint. One had a hyperflexion deformity of the toes. Another had destruction of the metatarsal joint of the first toe but no limitation of function. The remaining six patients had residual periarticular adhesions of the knee joints with slight limitation of motion on flexion (from 10 to 20 degrees) but no limitation on extension. Gonococci were recovered from the synovial fluid of fifteen patients of group 3, while the fluid from five was sterile. The average stay in the hospital was sixty-one days. Only three patients ultimately had no limitation of motion of joints. Six had an ankylosis of one joint with less than 10 degrees of joint motion.

Three patients were capable of only 50 degrees of motion of one knee joint. Eight patients had periarticular fibrosis of one knee joint with from 10 to 15 degrees of limitation of motion on flexion but with full extension.

New Jersey Medical Society Journal, Trenton

35: 129-192 (March) 1938

- The Physician's Use of the Patient's Hospital Record. A. F. McBride, Paterson.—p. 133.
Safeguarding the Patient's Record. J. R. Howard Jr., Plainfield.—p. 135.
Legal Aspects of a Patient's Record. W. J. Wright, Hackensack.—p. 137.
Uveal Tuberculosis. G. P. Meyer, Camden.—p. 138.
Failures After Gastrojejunostomy: Clinical and Experimental Study. W. H. Barber and A. Bogatko, New York.—p. 142.
Treatment of Pituitary and Ovarian Dysfunction. Rita S. Finkler and M. Friedman, Newark.—p. 150.
Tuberculosis of Anorectal Region. J. Gerendasy, Elizabeth.—p. 156.
Role of the Hospital in Reducing Maternal Mortality: Maternal Welfare Article Number Twenty-Four. A. W. Bingham, East Orange.—p. 160.
The Common Cold and Cough. C. I. Ulmer, Gibbstown, and R. P. Fischelis, Trenton.—p. 164.

Public Health Reports, Washington, D. C.

53: 485-518 (April 1) 1938

- Differences in Opportunities for Health. J. W. Mountin and Hazel O'Hara.—p. 485.
Contamination of Pasteurized Milk by Improper Relative Pressures in Regenerators. A. W. Fuchs.—p. 496.
Effect of Certain Small Filters on Plate Counts of Water Passing Through Them. A. B. Cronkright and A. P. Miller.—p. 505.

53: 519-550 (April 8) 1938

- Disabling Sickness Among Male Industrial Employees During Final Quarter of 1937 and the Entire Year. W. M. Gafafer and Elizabeth S. Frasier.—p. 519.
Variations in the Form and Services of Public Health Organizations. J. W. Mountin, A. J. Borowski and Hazel O'Hara.—p. 523.
A Gas Absorption Apparatus. M. S. Nichols.—p. 538.

Puerto Rico J. Pub. Health & Trop. Med., San Juan

13: 351-426 (March) 1938

- Influence of Tropical Anemias on Physiopathology of the Brain. W. Rotter and A. Peña Chavarria, San José, C. R.—p. 359.
Actinomycosis in Puerto Rico. A. L. Carrión, San Juan.—p. 367.
Tuberculosis in a Frog. L. M. González, San Juan.—p. 399.

Rocky Mountain Medical Journal, Denver

35: 265-344 (April) 1938

- Diagnosis and Treatment of Lesions of Cranial Nerves. W. E. Dandy, Baltimore.—p. 282.
Academic or Unsuccessful Research. A. B. Luckhardt, Chicago.—p. 288.
Etiology and Treatment of Osteomyelitis of the Skull. O. J. Dixon, Kansas City, Mo.—p. 295.
Value of Cystometric Studies in Atonic Bladder. M. A. Magid, Denver.—p. 299.
Specific Treatment of Hay Fever and Pollen Asthma in Denver. R. P. Johnson, Fort Kamehameha, Pearl Harbor, Hawaii.—p. 305.
*Use of Urea in Treatment of Wound Infections. G. E. Baker, Casper, Wyo.—p. 310.
Care of Rubber Goods. Sister Mary de Lourdes, Denver.—p. 312.

Urea in Treatment of Wound Infections.—For the last year Baker has used from 25 to 30 per cent solutions of urea for the treatment of wound infections. Results have been uniformly gratifying. It has been found to be stable in solution, nontoxic and remarkably effective in the removal of wound exudates, bringing about normal repair of tissues through its passive mechanical cleansing action. The material has been used in the same concentrations for the irrigation of wound sinuses. Open wounds demonstrating infection, fistulas or sloughs of the abdominal wall following operation, chronic discharging ulcerous areas, sinus tracts resultant from chronic bone infections and the like have undergone treatment with urea. Within a few days after institution of treatment the indolent areas of the wound begin to assume a freshened pink appearance and have a tendency to bleed freely. Wound exudates are readily extruded. Improvement is definite and continued. The odor from draining wounds is reduced to a minimum, often disappearing entirely. Pain due to prolonged use may be overcome by either reducing the strength of the solution slightly or by the use of a mild sedative before renewing the dressings or beginning the irrigations.

South Carolina Medical Assn. Journal, Greenville

34: 91-114 (April) 1938

- Eight Hour Duty for Private Duty Nurse from the Standpoint of the Physician. A. T. Moore, Columbia.—p. 91.
X-Rays, Radium and Electrosurgery in Treatment of Cancer of Skin. W. M. Sheridan and P. Elkin, Spartanburg.—p. 94.

Southern Medical Journal, Birmingham, Ala.

31: 339-464 (April) 1938. Partial Index

- Significance of Calcifications Within Lungs. D. A. Rhinehart, Little Rock, Ark.—p. 339.
*Artificial Fever Therapy in Skin Disorders: Clinical and Biochemical Studies, with Especial Reference to Physiology Involved. A. B. Litterer and K. Phillips, Miami, Fla.—p. 345.
Multiple Primary Malignancies of Large Intestine. G. V. Brindley, Temple, Texas.—p. 355.
Surgical Treatment of Cancer of Larynx. E. A. Looper, Baltimore.—p. 367.
Prophylaxis of Inflammatory Conditions in the Female Breasts. E. C. Smith, New Orleans.—p. 374.
Anterior Pituitary Gonadotropic and Anterior Pituitary-like Hormones in Treatment of Cryptorchidism. H. H. Turner, Oklahoma City.—p. 381.
Sulfanilamide in Treatment of Genito-Urinary Infections. A. L. Clark and D. W. Branham, Oklahoma City.—p. 387.
Sulfanilamide in Treatment of Gonococcal Infections in the Male. T. Ainsworth, Jackson, Miss.—p. 391.
Sulfanilamide Therapy in Gonorrhea and Its Complications. E. P. Alyea, W. E. Daniel and J. S. Harris, Durham, N. C.—p. 395.
Chronic Ulcerative Colitis. H. W. Cave and T. T. Mackie, New York.—p. 414.
Physiologic and Pathologic Reactions of Liver. F. C. Mann, Rochester, Minn.—p. 425.
Certain Aspects of Intracapsular Extraction of Cataracts in Average Practice: Report of Fifty-Eight Consecutive Cataract Operations. R. G. Anderson, Spartanburg, S. C.—p. 431.
Clinical Note on Occurrence of Neurologic Manifestations in Insulin Hypoglycemia (Sakel). L. A. Golden, New Orleans.—p. 434.
Anatomic and Functional Results in Fractures of Pelvis. F. W. Caruthers, Little Rock, Ark.—p. 451.

Fever Therapy in Cutaneous Disorders.—Litterer and Phillips used fever therapy in the treatment of 167 cases of cutaneous diseases (eczematoid, erythema multiforme, psoriasis, endocrinopathies, urticaria and seborrheic dermatitis). In the eczematoid group a 96 per cent immediate response was obtained and this high improvement continued well into the fourth month of observation. Between this and the fourth year a relapse of 31.25 per cent was observed in those patients who received a complete clinical remission of their cutaneous lesions immediately after the course of fever treatments. The immediate response in the erythema multiforme cases revealed a complete resolution in 90 per cent, which again extended well into the fifth month. But over a period of two years there was a relapse ratio of 33⅓ per cent. Psoriasis revealed a 50 per cent immediate response, but within four years 33⅓ per cent had relapsed. The immediate response of endocrine cases to fever therapy with complete abeyance of their cutaneous manifestations was 80 per cent. After four years there have been no relapses. Only a 62.5 per cent immediate response was obtained in urticaria and 60 per cent of these relapsed. In addition to these eighty cases, a group of seventy-five cases has been studied over the last seven years with reference to the part played in the etiology by underlying systemic conditions. In more than 90 per cent there can be demonstrated by thorough study abnormal upsets in one or more of the gastrointestinal, liver and biliary or endocrine systems. When these conditions are isolated and the treatment consists of correcting them in addition to fever therapy, the immediate response immediately rises to 85 per cent and the relapse ratio drops to 25 per cent. So successful has this combined management been that the authors have practically discontinued cutaneous testing and attempted desensitization in urticaria. The results are decidedly encouraging and justify further investigation. Much light is thrown on the mechanism of both the etiology and the response of these cutaneous disorders by a study of physiologic and biochemical changes already established during fever therapy. The two great regulators of body temperature balance in normal man are the heat regulating mechanism in the brain base and the proper function of the skin. Temperature changes at the base of the center of the brain invoke an immediate reflex response in the circulation at the surface with an associated fluctuation in the elimination of water and crystalloids through the excretory ducts. Fever therapy exerts its benefit by striking at the mechanism of the lymph space.

Surgery, Gynecology and Obstetrics, Chicago

66: 691-818 (April) 1938

- *Intubation Studies of the Human Small Intestine: X. Nonsurgical Method of Treating, Localizing and Diagnosing the Nature of Obstructive Lesions. W. O. Abbott, Philadelphia, and C. G. Johnston, Detroit.—p. 691.
Mechanical Resuscitation in Advanced Forms of Asphyxia: Clinical and Experimental Study in Different Methods of Resuscitation. P. N. Coryllos, New York.—p. 698.
The Fertile Period in Practice: Five Year Clinical Study. A. G. Miller, Hobart, Ind.—p. 723.
Methods of Demonstrating the Activity of Corpus Luteum. D. I. Macht, Baltimore.—p. 732.
Experimental Cholecystitis. H. G. Aronsohn and E. Andrews, Chicago.—p. 748.
Carcinoma of Rectum: Plea for Group Study and Treatment. P. C. Morton, New York.—p. 769.
Routine Dissection and Demonstration of Recurrent Laryngeal Nerve in Subtotal Thyroidectomy. F. H. Lahey, Boston.—p. 775.
Bilateral Nontuberculous Iliopsoas Abscess. Marie Ortmayer, Chicago.—p. 778.
Tenosynovitis of Long Head of Biceps Humeri. V. L. Schrage, Chicago.—p. 785.
Operative Injuries of the Ureter. D. Feiner, Brooklyn.—p. 790.
Albee Spine Fusion Operation in Treatment of Scoliosis. F. H. Albee and A. Kushner, Venice, Fla.—p. 797.
*Primary Fibroblastic Tumors of Choroid Plexus of Lateral Ventricles: Clinicopathologic Study of Three Cases. W. J. Gardner and O. A. Turner, Cleveland.—p. 804.
Epidermoid Carcinoma of Buccal Mucosa. C. C. Lund, Boston.—p. 810.

Intubation of Small Intestine.—In a fairly large group of patients with gastrointestinal obstruction, gastroduodenal suction is not enough to relieve the distention. In a still larger group, though the distention is relieved, the location as well as the nature of the obstructive lesion is still unknown. Abbott and Johnston offer a method (intubation) of management that will often decompress the abdomen by completely emptying the entire small intestine proximal to the obstruction and has enabled a restitution of normal intestinal action without the necessity of surgical intervention. Moreover, having advanced the tube to the point of obstruction, one can often, by the study of aspirated intestinal contents and by the injection of a minimal amount of an opaque medium through the tube, identify both the position and the nature of the obstructing lesion. Whenever gangrene of the intestine is suspected, operation must continue to be the treatment of immediate choice. The procedure is based on the method described by Miller and Abbott for intubation of the small intestine. Intubation for the relief of intestinal obstruction has been attempted in sixteen cases with failure in only three. While the symptoms in one or two instances were mild, the patients were desperately ill. In nine instances function returned spontaneously following a variable period of decompression. Paralytic ileus and organic obstructions have responded in an essentially similar fashion. In the four cases in which the obstructing lesion was studied roentgenologically after the injection of a barium sulfate suspension through the tube, the point of closure was identified and the end of the tube was found to be lying within a finger's length of the obstruction itself.

Primary Fibroblastic Brain Tumors.—Gardner and Turner present three cases of primary fibroblastoma of the choroid plexus of the lateral ventricle. All three tumors were removed at operation. The intraventricular location of the tumor was not suspected from the clinical signs and the exact localization was made only at operation. The tumors were of mesodermal origin and probably arose from the fibrous elements of the choroid plexus or tela choroidea. There is no clinical picture that will localize an intraventricular growth, although there are certain neurologic features which may at times direct attention to the possibility of a lesion in this location. This is particularly true when localizing signs are absent in the presence of an obviously expanding intracranial lesion. Periodic headaches or intermittent attacks of increased intracranial pressure have both been cited as the most suggestive evidence of a growth within the lateral ventricle. This periodicity is due to the ball-valve action of the tumor and can occur in other parts of the ventricular system; namely, in the third ventricle. When the large size of the tumor prevents it from moving freely or when local adhesions fix the tumor in one position, this phenomenon may be absent. Obvious signs of increased intracranial pressure may be late in developing in young patients, since in them cranial suture separation may serve to decompress the brain until the bulk of the tumor plus the concomitant cerebral

edema overcomes this compensation. Hemianesthesia and hemiplegia have been pointed out as the most important localizing evidence. Intraventricular tumors appear to occur most frequently during the first three decades of life. While in many instances the symptoms are less than one year in duration, there are wide variations. In tumors in this location, the duration of symptoms is no index of the malignant condition of the growth since, by reason of their location, they may block circulation of the cerebrospinal fluid and produce fulminating signs of increased intracranial pressure, despite the fact that they may be encapsulated and perfectly benign.

Tennessee State Medical Assn. Journal, Nashville

31: 81-124 (March) 1938

- What Should the Public Know About Syphilis? E. G. Clark, Nashville.—p. 81.
Hypertensive Disease: Basic Factors and Management. R. E. Ching, Memphis.—p. 87.
Relationship Between Water Balance and Intracranial Pressure. T. D. McKinney, Nashville.—p. 93.
Acute Mastoiditis. W. G. Kennon, Nashville.—p. 98.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

46: 183-232 (April) 1938

- Acute Hematogenous Osteomyelitis: Diagnosis and Rational Treatment. L. S. Lucas, Portland, Ore.—p. 183.
Bilateral Dermoid Cysts Complicating Pregnancy. J. V. Campbell, Oakland, Calif.—p. 186.
Surgical Significance of Gastric Leiomyomas. F. K. Collins and D. C. Collins, Los Angeles.—p. 188.
Surgical Treatment of Cancer of the Breast. T. F. Mullen, San Francisco.—p. 195.
Sorbitol. J. G. Strohm, Portland, Ore.—p. 200.
Present Status of the Problem of Functional Innervation of Thyroid Gland. A. C. Ivy, H. A. Davenport and S. Brock, Chicago.—p. 202.

West Virginia Medical Journal, Charleston

34: 145-192 (April) 1938

- Parathyroids and Diseases of Bones. T. P. Sprunt, Baltimore.—p. 145.
Toxic Goiter and Its Effect on Industry. N. W. Gillette, Toledo, Ohio.—p. 153.
Nystagmus, and Some Phases of Labyrinthine Disease. V. E. Holcombe, Charleston.—p. 157.
Industrial Medicine and Control of Syphilis. R. R. Jones, Washington, D. C.—p. 162.
Doctors' Bills and the Law. J. C. Bright, Keyser.—p. 168.
Clinical Evaluation of Sulfanilamide in Treatment of Acute Gonorrhea in the Male. W. C. D. McCuskey and J. F. McCuskey, Wheeling.—p. 175.

Wisconsin Medical Journal, Madison

37: 177-260 (March) 1938

- Treatment of Pneumonia. C. C. Sturgis, Ann Arbor, Mich.—p. 193.
New Advances in Treatment of Fracture of Neck of Femur. E. T. Evans, Minneapolis.—p. 198.
Surgical Treatment of Severe Streptococcal Infections. R. A. Kinsella, St. Louis.—p. 201.
Pain Relief in Labor. R. M. Grier, Evanston, Ill.—p. 204.
Cataracts: Differential Diagnosis. F. H. Haessler, Milwaukee.—p. 208.

37: 261-360 (April) 1938

- Bedside Diagnosis of Cardiac Irregularities and Their Treatment. V. W. Koch, Janesville.—p. 277.
Clinical Use of Quantitative Blood Tests for Syphilis. W. F. Lorenz, Madison.—p. 281.
Syphilis and Pregnancy. M. Trautmann, Madison.—p. 286.
Use and Abuse of Obstetric Forceps. J. W. McGill, Superior.—p. 290.
Roentgen Kymography: Its Value in Diagnosis of Cardiac and Other Mediastinal Lesions. J. E. Habbe, Milwaukee.—p. 294.

Yale Journal of Biology and Medicine, New Haven

10: 309-418 (March) 1938

- Degree of Bachelor of Medicine in the American Colonies and the United States. F. C. Waite, Cleveland.—p. 309.
Induction of Tumors by 3:4:5:6-Dibenzcarbazole in Male Mice of CBA Strain, Which Develops Spontaneous Hepatoma. L. C. Strong, G. M. Smith and W. U. Gardner, New Haven, Conn.—p. 335.
Time of Ovulation in Chimpanzees. J. H. Elder, New Haven, Conn.—p. 347.
Studies on Electrical Potentials of Living Organisms: II. Effects of Low Temperatures on Normal Unanesthetized Mice. R. G. Meader and C. S. Marshall, New Haven, Conn.—p. 365.
Reaction of Ferrets to Inoculation with Haemophilus Pertussis. C. S. Culotta, New Haven, Conn.; F. L. Martins, Boston, and A. A. Liebow, New Haven, Conn.—p. 379.
Serologic Patterns in Human Serums: Heteroagglutinins for Sheep, Mouse and Hen Erythrocytes. G. H. Smith, New Haven, Conn.—p. 391.
Anatomic and Chemical Changes in Myocardium Following Short-Term Coronary Artery Occlusion in Dogs. L. H. Bronson, Cleveland.—p. 405.
Syphilis Control in New Haven. C. F. Batelli and I. V. Hiscock, New Haven, Conn.—p. 411.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Disease in Childhood, London

13: 1-88 (March) 1938

- Treatment of Renal Rickets. G. Graham and W. G. Oakley.—p. 1.
Periarthritis Nodosa with Subcutaneous Lesions and Recovery: Case. C. W. Vining.—p. 31.
*Congenital Steatorrhea Due to Pancreatic Defect. Margaret H. Harper.—p. 45.
Administration of Thyroid Gland to Premature Babies. A. Moncrieff.—p. 57.
*Undulant Fever in Children. D. H. Paterson and C. Hardwick.—p. 65.
A Standard Intravenous Glucose Tolerance Test. T. Crawford.—p. 69.

Congenital Steatorrhea Due to Pancreatic Defect.—Harper reports eight cases of congenital steatorrhea with the results of postmortem examination in four. The symptoms common to all these babies were failure to thrive on a normal diet, even on breast milk, and the peculiarity of their stools. These were bulky, frequent and offensive, with a rancid odor and of a pale creamy color or pale green. Oily material was passed with the stool and separately. As the children became older, x-ray examination of the bones showed osteoporosis, the teeth were badly developed, anemia became evident, sometimes of the macrocytic type, and there was great susceptibility to respiratory infections. Microscopic examination of the pancreas in those cases in which a necropsy was obtained suggests a failure of development of the gland. The conclusion arrived at after reviewing the material available in the literature and the cases reported here is that, in cases in which there is evidence of the passage of fatty stools from birth (particularly butter-stools) with failure of nutrition, the diagnosis of a congenital defect of the pancreas can reasonably be made.

Undulant Fever in Children.—Paterson and Hardwick encountered eight cases of undulant fever in children between the ages of 6 and 14½ years. Children comprise the largest milk-consuming section of the community, but the rarity of the disease among them has not yet been satisfactorily explained. It is probable that many cases are never recognized. Of the eight patients the youngest was 6 years old and only one was a girl. The beginning of the illness was abrupt, with signs of an infection of the nasopharynx, and the diagnosis was either that of a common cold or of influenza; it was only the persistence of the fever that attracted attention. In four instances the bouts recurred over a period of four months; in one case they persisted for a year. Agglutinations were positive in every case to a titer of 1:500 or higher. With 0.2 cc. of a vaccine containing both abortus and melitensis organisms, cutaneous tests were done on the patients and a strongly positive reaction was obtained in each case. The cutaneous test by itself, that is, without a positive agglutination, does not give reliable evidence of the disease.

Brain, London

61: 1-132 (March) 1938

- Increased Spontaneous Activity Produced in Monkeys by Brain Lesions. C. F. Richter and M. Hines.—p. 1.
*Spontaneous Hematomyelia: Short Review and Report of Cases Illustrating Intramedullary Angioma and Syphilis of Spinal Cord as Possible Causes. J. C. Richardson.—p. 17.
Normal Disks in Patients with Chiasmal Lesions. A. A. McConnell and A. J. Mooney.—p. 37.
Neuron as Studied by Microincineration. L. Alexander.—p. 52.
Origin of the Fall in Pressure of Cerebrospinal Fluid After Its Artificial Elevation by Jugular Occlusion. T. H. B. Bedford.—p. 62.
*Vascular Lesions in the Brain Stem and Occipital Lobe Occurring in Association with Brain Tumors. M. T. Moore and K. Stern.—p. 70.
Observations on Pathways Transmitting Sensation of Taste. H. G. Schwartz and G. Weddell.—p. 99.
Primary Generalized Amyloid Disease with Involvement of Nerves: Case. S. De Navasquez and H. A. Treble.—p. 116.

Spontaneous Hematomyelia.—Richardson cites four cases of spontaneous hematomyelia. In the first case there was a small angioma in the first lumbar segment of the spinal cord which had ruptured, causing a central hemorrhage from the fourth thoracic to the lowest sacral segment. The angioma was considered a developmental vascular lesion rather than a tumor. The second case was one of old hematomyelia occurring with syphilitic meningomyelitis. A central hemorrhage occurred from the ninth thoracic to the fifth lumbar segment,

leaving an elongated strip of gliosis containing a large amount of old blood pigment. The third case was one of cervical hematomyelia in which the exact cause was not demonstrable, since pathologic examination was incomplete. In the last case hematomyelia was not fatal but left permanent sensory and motor changes resembling those of syringomyelia. Traumatic hematomyelia has assumed a false position of importance in the incidence of true hematomyelia. Hemorrhage is often overstressed in the conception of the pathologic changes due to injury of the spinal cord. Spontaneous hematomyelia should be considered as primary, nontraumatic hematomyelia and is probably always due to disease or maldevelopment of the spinal vessels. Vascular maldevelopments, similar to the maldevelopment found in the first case, comprise one of the commonest known causes of the condition.

Vascular Lesions in the Brain with Brain Tumors.—Moore and Stern examined 130 brains in which brain tumor or abscess was present for evidences of vascular lesions. The first hundred were from a consecutive series of necropsies, and fourteen showed accompanying vascular lesions either in the pons, midbrain or occipital lobe. In addition to these fourteen cases, four showing vascular lesions were examined among the remaining thirty brains of the entire group. Five of the total of eighteen cases of hemorrhagic cases presented the gross appearance of occipital lobe infarction and lesions of the brain stem in the others. Fourteen cases were studied histologically in frozen and celloidin sections. The basilar artery and its branches and the posterior cerebral and its calcarine branches were dissected out, embedded in paraffin, stained and studied. With the exception of one case (softening in the peduncular region), the lesions of the brain stem consisted of multiple fresh hemorrhages from the arteries. Histologically they resembled hemorrhages in arterial hypertension. The occipital lesions are hemorrhagic or ischemic infarctions. It is suggested that sudden changes in the pressure relationship between the supratentorial and infratentorial spaces lead to disturbance of the circulation in the area of the rostral end of the basilar artery. Compression of the posterior cerebral artery causes occipital infarction. Arterial congestion in the basilar artery causes a predisposition to hemorrhages which are finally brought on by a reflex rise of the systemic blood pressure. Surgical procedures seem to have no pathogenic significance. The clinical picture of the hemorrhages of the brain stem is that of a sudden onset of unconsciousness. They seem to be fatal in every case. The occipital lesions have their clinical counterpart in apoplectiform manifestations or visual disturbances which complicate the neurologic picture.

British Journal of Physical Medicine, London

1: 81-116 (March) 1938

- Relative Rise in Temperature of Tissues Heated in the High Frequency Field. H. J. Taylor.—p. 82.
Role of Chromotherapy in Modern Medicine and Surgery. R. D. Howat.—p. 86.
Electrical Investigation of Neuromuscular Function. A. P. Cawadiaz.—p. 90.
Apparatus for Ultraviolet Irradiation. L. G. H. Sarsfield.—p. 94.
Some Indications for Physical Treatment. D. Pennington.—p. 100.

British Medical Journal, London

1: 551-604 (March 12) 1938

- Some Recent Work in Experimental Cancer Research. W. E. Gye.—p. 551.
*Vitamin C Deficiency in Peptic Ulceration and Hematemesis. B. Portnoy and J. F. Wilkinson.—p. 554.
*Vitamin C Deficiency in Peptic Ulceration Estimated by Capillary Resistance Test. G. Bourne.—p. 560.
Prophylactic Use of Sulfonamide Preparations in Obstetric Practice. R. W. Johnstone.—p. 562.
Early Occurrence of High Blood Pressure in Coarctation of the Aorta. E. Joan Rooke.—p. 564.

Vitamin C Deficiency in Peptic Ulcer.—Portnoy and Wilkinson examined the blood content and the urinary excretion of vitamin C (cevitamic acid) by six methods in fifty-one control subjects, twenty-five patients with peptic ulceration and thirty-one patients with hematemesis. With the urinary excretion method, groups of normal controls, miscellaneous ward controls, patients with peptic ulcers and patients with hematemesis excreted mean daily amounts of 29, 17, 7 and 7 mg. respectively. With the saturation test it was found that to

produce a 50 per cent excretion of the administered cevitamic acid the normal controls, patients with peptic ulceration and patients with hematemesis required from 500 to 2,300, 2,100 to 5,000 and 2,000 to 8,000 mg. respectively. The initial plasma cevitamic acid value (normal from 0.6 to 1.85 mg. per hundred cubic centimeters, patients with peptic ulceration and hematemesis from 0.14 to 0.59 mg. per hundred cubic centimeters) was an approximate measure of the vitamin C nutrition of the body tissues. In an oral cevitamic acid tolerance test (after 1,000 mg. of cevitamic acid orally) the maximal plasma cevitamic acid value was reached in from one to two hours, while the maximal urinary excretion occurred in from four to six hours; in normal controls there was a good response in both blood and urinary levels, while in the ulcer and hematemesis cases the response was negligible. The maximal plasma cevitamic acid value, determined by an intravenous tolerance test, was reached in from fifteen to twenty minutes after the intravenous test dose of 1,000 mg. of the acid, while the maximal urinary excretion occurred some two hours later. The results of the intradermal test for vitamin C deficiency agreed very closely with those of the other tests, decolorization times longer than ten minutes indicating vitamin C deficiency. The severest degrees of vitamin C deficiency were found in the patients with hematemesis. It is suggested that large doses of vitamin C should be given to patients with peptic ulceration and hematemesis.

Vitamin C Deficiency in Peptic Ulcer.—Bourne used Gothlin's capillary fragility method in examining patients with gastric and duodenal ulcer, cases of various diseases and normal subjects of both sexes. The lowering of the capillary resistance in cases of gastric ulcer is traceable directly to deficiency of antiscorbutic vitamins in the diet. The results were not of such a clearcut nature in the duodenal ulcer cases but there is little doubt that patients who have been on the dietary regimen usually prescribed for more than ten days show a definite increase in capillary fragility unless the diet has been supplemented with some potent source of antiscorbutic vitamins. The genesis of peptic ulcer could not be correlated definitely with deficiency of antiscorbutic vitamins in the diet, but the possibility that it may have a part cannot be excluded. It seems more likely that the deficiency of antiscorbutic vitamins in the therapeutic diet may be a factor influencing the transition from the acute to the chronic condition.

Glasgow Medical Journal

11: 113-160 (March) 1938

- *Weil's Disease: New Occupational Disease in Fish Workers. L. S. P. Davidson.—p. 113.

Weil's Disease.—A study of 130 fish workers in Aberdeen in whom Davidson obtained positive serologic evidence of previous leptospiral infection suggests that Weil's disease occurs in three grades: (1) latent or subclinical infection, with or without insignificant symptoms, (2) mild infections with pyrexia and malaise but without jaundice and (3) severe infections with marked prostration and jaundice. The first group can be recognized only by serologic tests. The second group may be suspected if the illness occurs in an individual working in an occupation peculiarly liable to Weil's disease, but serologic tests are essential to confirm the suspicion. Cases in group 2 are usually diagnosed as influenza or tonsillitis. The third group has a symptomatology and course so typical that the clinical diagnosis can often be made with assurance. Since there can be no Weil's disease without rats, a campaign for the extermination or reduction of the rodent population is of paramount importance. Since it is fish remnants which attract the rats and since the spirochetes live in the slimy water, care should be spent in the removal of all offal at the end of each day's work. Half an hour before work commences in the morning the floors, benches and tables should be vigorously hosed with water and thereafter treated with a suitable disinfectant; a hypochlorite solution has a lethal effect on leptospirae in a dilution of 1:4,000. A high degree of immunity can be obtained from the subcutaneous inoculation of killed vaccines of *Leptospira icterohaemorrhagica*. Treatment on the general lines suitable for any severe febrile disease is required. A reduction both in the mortality of the disease and in the

severity of the toxemia has been shown to result from anti-leptospira serum, particularly if the serum is given early; i. e., within the first four days. After the seventh day, when the septicemic stage is over, the beneficial effects are much less marked. The amount of serum advocated is from 10 to 20 cc. given intramuscularly or intravenously, the dose to be repeated in from four to six hours as required.

Journal of Pathology and Bacteriology, Edinburgh

46: 221-400 (March) 1938

- Effect of X-Radiation on Blood and Lymphoid Tissue of Tumor-Bearing Animals. J. R. Clarkson, W. V. Mayneord and L. Dorothy Parsons.—p. 221.
- Development of Fibrosis in the Kidney. J. B. Duguid.—p. 237.
- Action of Sodium Polyacrylate Sulfonate ("Liquoid") on Blood Cultures. T. von Haebler and A. A. Miles.—p. 245.
- Some Sources of Error in Interpretation of Fermentation Reactions, with Especial Reference to Effects of Serum Enzymes. N. E. Goldsworthy, J. L. Still and J. A. Dumaresq.—p. 253.
- Fermentation of Glucosides by Streptococci. H. D. Wright.—p. 261.
- Chronic and Fatal Form of Hydrothorax Produced in Rabbits by Intrapericardial Injection of Tincture of Iodine and Mechanism of Its Production. J. H. Dible and G. A. C. Lynch.—p. 271.
- Combining Power of Staphylococcus Toxoid: Danysz Effect and Other Factors Influencing Its Determination. M. L. Smith and S. A. Price.—p. 289.
- Oxygen Uptake of Washed Suspensions of Corynebacterium Diphtheriae in Presence of Glucose and Glycogen. R. Knox and R. Passmore.—p. 303.
- Metabolism of Washed Suspensions of Corynebacterium Hofmannii. R. Passmore.—p. 309.
- Production of Toxin by Bacillus Histolyticus (Clostridium Histolyticum). L. E. Walbum and G. C. Reymann.—p. 315.
- Chemotherapeutic Action of Synthalin in Experimental Infections with Trypanosoma Brucei and Trypanosoma Congolense. P. Browning.—p. 323.
- *Estimation of Fragility of Red Blood Corpuscles. E. F. Creed.—p. 331.
- *Fragility of Red Blood Cells: Its Measurement and Significance. J. V. Dacie and Janet M. Vaughan.—p. 341.
- Venous Splenomegaly: Study in Experimental Portal Congestion. T. B. Menon.—p. 357.
- Aronson's Streptococcus: Experimental Study. J. W. Howie.—p. 367.

Estimation of Fragility of Erythrocytes.—Creed describes a method of estimating the fragility of red blood corpuscles which he believes gives more consistent and accurate results than methods previously employed. It consists in the addition of measured quantities of aerated whole blood to sodium chloride solutions of varying concentration, prepared by a dropping technic from a stock 25 per cent solution. The percentages of corpuscles hemolyzed and left unhemolyzed are estimated by matching against a series of color standards. The effect of the venosity of the blood on fragility is considerable, but preliminary aeration of the blood reduces the fragility of samples of varying venosity to a constant level. Variations in the p_{H} of the distilled water employed are a possible source of error in fragility determinations, but their effect is minimized by using whole blood in a dilution of 1:25. Anemia of itself increases resistance to hypotonic saline solution and must be taken into account in interpreting fragility curves. In normal persons the concentration of sodium chloride which hemolyzes 4 per cent of the corpuscles varies between 0.41 and 0.45 per hundred cubic centimeters and the concentration hemolyzing 50 per cent of corpuscles varies between 0.36 and 0.4 per hundred cubic centimeters. The fragility curve of a given normal person remains constant over long periods.

Fragility of Erythrocytes.—The method that Dacie and Vaughan used in estimating fragility was a modification of that of Creed. The calculated normal median fragility measured on fifty normal subjects is 0.366 Gm. per hundred cubic centimeters of sodium chloride, the healthy range being from 0.334 to 0.398 Gm. Red cell fragility is closely related to cell dimensions expressed as the mean corpuscular thickness divided by mean corpuscular diameter ratio. The latter may be termed an intrinsic factor influencing fragility. Increase in this ratio is associated with increase in fragility, but the reverse is not necessarily true. Extrinsic factors influencing fragility are the oxygen and carbon dioxide tension of the blood and the temperature and p_{H} of the hemolytic solution. Anemia produces an apparent reduction in fragility. This is partly due to the increased amount of plasma contained in any drop of blood, partly to change in cell volume resulting from oxygenation. Chemical variation in the cell constitution may also be important.

Journal of Physiology, London

92: 131-228 (March 14) 1938

- Effect of Certain Hormones on Activity of Uterine Muscle of Mouse. G. H. Bell and J. M. Robson.—p. 131.
- Effect of Placenta on Body Weight of Mouse. J. B. Brooksby and W. H. Newton.—p. 136.
- Influence of Hydrogen Ion Concentration on Surface Tension of Some Colloidal Solutions. P. W. Perryman and C. F. Selous.—p. 151.
- Sensory Fibers in Spinal Accessory Nerve. F. Echlin and N. Propper.—p. 160.
- Observations in Man on Pulse-Accelerating Reflex from Voluntary Muscles of Legs. M. Alam and F. H. Smirk.—p. 167.
- Action of Creatine and Creatinine on Circulatory System. B. G. Shapiro.—p. 178.
- Action of Young's Glycotropic Factor of Anterior Pituitary Gland. H. P. Himsforth and D. B. M. Scott.—p. 183.
- *Effect of Salt Deficiency in Man on Volume of Extracellular Fluids, and on Composition of Sweat, Saliva, Gastric Juice and Cerebrospinal Fluid. R. A. McCance.—p. 208.
- Carbohydrate Metabolism of Fetal Dog Under Influence of Insulin. H. Schlossmann.—p. 219.

Salt Deficiency and Extracellular Fluids.—McCance found that experimental deficiency of sodium chloride in man produced: 1. A reduction in the volume of the body fluids in which injected sucrose or inulin was dissolved (the extracellular fluids). Reductions of from 28 to 38 per cent were observed. 2. A fall in the concentration of sodium, a rise in the concentration of potassium and no consistent change in the concentration of chloride in resting saliva. 3. A variable reduction or little change in the free and total hydrochloric acid and in the total chloride of gastric juice. These changes bore no close relationship to the simultaneous chloride changes in the plasma. There was also a small fall in the sodium and a rise in the potassium in the gastric juice. 4. A fall in both sodium and chloride of cerebrospinal fluid. 5. A considerable but variable fall in the concentration of sodium chloride in sweat. "Adaptation" to repeated sweating did not contribute to this result.

J. Royal Inst. Public Health and Hygiene, London

1: 315-376 (March) 1938

- Milk as It Affects the Producer. L. M. Davies.—p. 334.
- Milk as It Affects the Consumer. H. C. M. Williams.—p. 341.
- History of Public Health. H. L. Oldershaw.—p. 361.

Lancet, London

1: 533-592 (March 5) 1938

- Treatment of Retention of Testis. T. W. Mimpriss.—p. 533.
- *Measurement of Vitamin B₁ in Human Urine as an Index of Nutritional Level: Further Quantitative Data. L. J. Harris, P. C. Leong and C. C. Ungley.—p. 539.
- Onchocerciasis (Filarial Blinding) with Manifestations Developing in Britain: Case. A. R. D. Adams.—p. 545.
- Mechanical Blood Pipet Shaker. R. G. Macfarlane.—p. 548.
- *Treatment of Infected Wounds with Urea. L. F. Muldavin and Jean M. Holtzmann.—p. 549.
- Acute Osteomyelitis of Patella. T. Moore.—p. 552.

Vitamin B₁ in Urine as Index of Nutritional Level.—Harris and his associates report data for various classes of subjects. Normal well nourished controls excreted on the average about 20 international units of vitamin B₁ daily. A group of "surgical" patients, who came from a lower social class in a poor industrial area and most of whom were known to have been on diets low in vitamin B₁, excreted only one third of this "normal" figure. Somewhat lower values were seen in a group of miscellaneous medical cases (average 5 international units daily). The lowest figures of all—excretions of 3.5 international units daily and less—were in cases of beriberi and polynuritis of nutritional origin. Low values were seen also in a proportion of the cases of polynuritis which had been judged on clinical grounds to be not primarily of nutritional origin. Responses to test doses were approximately parallel with the "resting levels" and served to confirm the separation into the foregoing categories. It is concluded that the urinary excretion furnishes a useful guide to the state of nutrition of the subject with regard to vitamin B₁. The low values so often found in medical cases may probably be attributed to one or more of the following causes: anorexia, poor hospital diets, raised metabolism (especially in fever), wasting of body tissues and faulty absorption or utilization. The importance of providing specially nourishing food during illness and convalescence is emphasized by these results. A "resting level" of excretion

of from 10 to 20 international units daily and a response of upward of 30 international units after the standard test dose (350 international units daily) implies average normal nutrition. Probably with the more advanced state of avitaminosis the most accurate indication of the degree of the deficit can be obtained by a determination of the number of repeated test doses which are needed before "saturation" is finally brought about at the normal level.

Treatment of Infected Wounds with Urea.—The procedure that Muldavin and Holtzmann used in the treatment of 170 cases of variously infected wounds with urea crystals is as follows: The wounds were syringed free from pus and necrotic material with a saturated solution of urea, excessive moisture was removed and urea crystals were then liberally applied. Waxed paper was placed next to the crystals to keep them in contact with the wound and to prevent the dressings from becoming soaked. This had the further advantage that it prevented the dressings from sticking to the raw surface of the wound. In all but small wounds zinc cream was spread over the adjacent skin. This was used as a precaution, since some moisture will reach the surrounding skin however carefully discharging wounds are dressed. Owing to the extreme diffusibility of urea when combined with a saturated solution for syringing, even the deepest wound can be treated effectively. After two or three applications, sloughs disappear and also any foul odor. Replacing the slough is a highly vascular granulating surface. However sluggish the local metabolism may be, this response apparently can be relied on and is often spectacular. Septic burns under this treatment become clean and form granulations so quickly that the surrounding epithelium is able to grow in with but little delay. The same prompt response is often obtained in varicose ulcers. The time taken for complete healing of the ulcer depends on its size and depth and on its chronicity. The response of superficial abscesses is good; the area of induration surrounding an abscess was eliminated in some and diminished in all cases by the urea. In the treatment of carbuncles, urea could be relied on to free the area of the wound from necrotic material. There is no evidence that urea directly stimulates epithelization. For this reason urea cannot be used as an "all purpose" casualty dressing. Urea does not exert an osmotic effect, no matter how applied, since cell membranes are freely permeable to it; i. e., any strength of aqueous urea solution will hemolyze blood. Pain experienced as the result of the application of urea cannot be due to an osmotic effect.

1: 593-648 (March 12) 1938

The Public Health Aspect of Heart Disease in Childhood. B. Schlesinger.—p. 593.

*Clinical Observations on Effect of Parenteral Administration of Vitamins A and D. W. N. Leak.—p. 599.

*Leptospirosis in Glasgow Tripe-Workers: Report of Possible Case of *Leptospira Canicola* Infection. R. D. Stuart.—p. 603.

Treatment of Peripheral Vascular Disease by Intermittent Venous Occlusion: New, Simple and Inexpensive Method. C. Wilson and A. G. Ogston.—p. 606.

Correction of Alar Deformity in Cleft Lip. A. H. McIndoe.—p. 607.

Generalized Osteitis Fibrosa Due to Retro-Esophageal Parathyroid Tumor. E. N. Allott and J. Jemson.—p. 609.

Typhoid Empyema Forty Years After Enteric Fever. C. R. T. Lane and A. E. Francis.—p. 612.

Parenteral Administration of Vitamins A and D.—Leak discusses his experience with the administration of a concentrated oily preparation of vitamins A and D by intramuscular injection. Some 1,500 injections have been given. The preparation used contains as its active ingredients 60,000 international units of vitamin A and 10,000 international units of vitamin D per cubic centimeter. Doses varying from 1 to 5 cc. have been used in twenty-four hours. The treatment has been observed to abolish the pain of iritis; rapidly rising temperatures reached their peak soon after midday, herpes zoster did not progress to vesicle formation and patients with general peritonitis looked well. It has also been used in severe burns for shock, in bronchopneumonia, in septicemia, in pernicious anemia with degeneration of the cord and in various nervous diseases. These vitamins should not be regarded as being strictly part of the fighting forces of the body at all. Rather they seem to give what one might call positive health to some of the body cells, enabling them to withstand the effects of infection. They are not anti-

toxic in the way of neutralizing the toxins, but they do seem to be able to render the cells more impervious to toxic effects and probably help to repair damage. If this is so, it is only natural that their sphere of usefulness should be wide.

Leptospirosis in Glasgow Tripe-Workers.—Stuart cites a case of leptospirosis, Weil's disease, in a tripe-worker and gives evidence of such infections having occurred in four of twenty-five other tripe-workers. Of fourteen rats caught in the building in which the cases occurred, eleven showed infection with *Leptospira icterohaemorrhagiae*. Evidence suggestive of *Leptospira canicola* infection has been found in one human case.

Medical Journal of Australia, Sydney

1: 417-464 (March 5) 1938

Assessment of the Physical Findings and Associated Structural Changes in Pulmonary and Cardiac Disease. D. J. Thomas.—p. 419.

Suppurative Conditions of Lung and Their Treatment, with Especial Reference to Ultra-Short Wave Therapy. G. C. Moss.—p. 433.

Disorders of Pituitary Gland in Relation to Circulatory and Metabolic Disturbances: Clinical Aspect. D. W. Carmalt-Jones.—p. 439.

Disorders of Pituitary Gland in Relation to Metabolic and Circulatory Disturbance. C. S. Hicks.—p. 441.

How Civilization Manufactures Neuroses: Survey of 200 Consecutive Cases. J. Bostock.—p. 444.

Chinese Medical Journal, Peiping

53: 109-210 (Feb.) 1938

Comparative Study of Ninety-Three Cases of Placenta Praevia and Seventy-Four Cases of Abruptio Placentae in the Peiping Union Medical College from 1921 to 1935. K. T. Lim.—p. 109.

Calcification in Angiomas. F. Y. Khoo.—p. 127.

*Relationship Between Vitamin C and Basal-Sulfur-and-Nitrogen Metabolism of Psoriasis Vulgaris. F. Reiss.—p. 141.

Hereditary Ataxia: Familial Occurrence in Five Generations. C. S. Yang, M. Y. Ling and S. L. Chang.—p. 161.

Disease Incidence Among Chinese Children: Observations from Six Hospitals. Annie V. Scott, C. C. Pi, and Kathryn S. Lair.—p. 169.

Treatment of Traumatic Tetanus: Note. H. C. Fang.—p. 185.

Intra-Abdominal Hemorrhage Due to Ruptured Graafian Follicle or Corpus Luteum: Report of Two Cases. S. Y. Chang.—p. 190.

Dysentery Bacillæmia. Annie V. Scott.—p. 193.

Foreign Body in Maxillary Sinus: Report of Three Cases. P. W. Wang.—p. 195.

Vitamin C and Nitrogen Metabolism in Psoriasis Vulgaris.—Reiss investigated the excretion of vitamin C in psoriatic patients, the response of excretion of vitamin C after peroral and intravenous medication, the effect of vitamin C on basal metabolism, sulfur and nitrogen metabolism and the clinical effects of vitamin C on psoriatic lesions. There was a definite decreased excretion of vitamin C in his cases of psoriasis. It is all the more remarkable, because the daily intake was within fairly normal limits. The author cannot give an acceptable explanation of this depletion but believes that it is either destroyed by an infective agent of various origins supposed to be the cause of psoriasis or that the disturbed epidermal cellular metabolism in psoriasis demands a higher vitamin C intake. It is not impossible that in order to eliminate the waste products, which are accumulated in psoriatic scales, a higher amount of cevitic acid is required and the organism apparently cannot fulfil this increased demand with the supply of the ordinary diet. Unless some ability to synthesize vitamin C is assumed, difference between intake and output should be indicative of storage. A large amount is retained and only proportionally small quantities are excreted, which is a further proof of the depletion and of the high demand of cevitic acid in psoriasis. There does not seem to be any difference between the intravenous and peroral route of medication in the urinary excretion of cevitic acid. No definite conclusion can be made on the influence of vitamin C on basal metabolism. There was a definitely decreased excretion of sulfur, which can be increased by medication with vitamin C. Cevitic acid has little appreciable effect on nitrogen excretion. With the exception of two cases which cleared up with the ingestion of cevitic acid and which were observed before the metabolic studies were begun, no case which is concerned primarily with the effect of vitamin C on metabolism showed any clinical improvement. It may be possible that clinical improvement could be achieved by saturating the organism. There seems to be some kind of vicious circle between the offered vitamin C and its rapid destruction, in the solution of which may be found the key to the treatment of psoriasis.

Presse Médicale, Paris

46: 545-568 (April 9) 1938

Morphologic Types of Predisposition to Pulmonary Tuberculosis. A. Jacquelin and A. Opolon.—p. 545.

*Late Cardiac Disturbances After Electrical Accidents. C. Verdan.—p. 547.

Cardiac Disturbances After Electrical Accidents.—

According to Verdan, auricular fibrillation is a syndrome of multiple causation. After discussing predisposing and eliciting factors, he directs attention to the importance of electrical accidents in the etiology of auricular fibrillation. It is known that electric current may elicit ventricular fibrillation which results immediately in death, but it is established also that auricular fibrillation may follow immediately after an electrical accident. The author regards it as curious that in this century of electricity, in which electrical accidents are comparatively frequent, such cases are rare. In a review of the literature he cites the case of Jaksch-Wartenhorst and Rhil, in which the auricular fibrillation was detected by electrocardiographic registration immediately after the electrical accident. Other cases of auricular fibrillation after electrical accidents are those of Dick, of Laslett, of Hay and Jones and of Sigler and Schneider. Especial attention is directed to the studies of Jellinek, who differentiates between immediate and late cardiac disturbances. The author thinks that the late cardiac disturbances after electrical accidents deserve especial attention. He gives detailed histories of two interesting cases which have the following points in common: 1. At the time of the appearance of the first symptoms, both patients were young men of about the same age, 31 and 32 years, respectively. 2. In neither of them did the previous history reveal rheumatism, polyarthritis or febrile inflammatory diseases. 3. Neither of the two presented cardiac defects, especially mitral stenosis. 4. They did not have hyperthyroidism. 5. Neither of the two patients could state exactly when the first symptoms had disappeared. 6. The auricular fibrillation had existed for several years without modification, but it did not diminish the working capacity of the patients. 7. Both of the patients had sustained a typical electrical accident (shock of 500 and 220 volts, respectively, of an alternating current), before the appearance of the first symptoms. Since no other causes could be found, it is assumed that the cardiac disturbances are due to the electrical accidents. In view of the period of latency, however, which was especially prolonged in the second case, the connection is not absolutely certain. The author describes the history of a third patient with cardiac disturbances in whom the anamnesis revealed many minor and one rather severe electrical accidents. He admits that observations will be necessary to confirm or to contradict his view on the possibility of an etiologic connection between electrical accidents and auricular fibrillation. He says that just when this report was ready for the press a paper by Bruno Vogt appeared in the *Klinische Wochenschrift* (16:1671 [Nov. 27] 1937) on disturbances of the cardiac rhythm and anginal disturbances after an electrical accident. This case is interesting because it confirms Hüllstrung's observations on the elicitation of anginous disorders by electrical shocks.

Revue de Stomatologie, Paris

40: 209-286 (April) 1938. Partial Index

Mixed Tumors of Palatine Arch with Particular Histologic Character. L'Hirondel and J. Leroux-Robert.—p. 226.

*Present Histologic Conception of Mixed Tumors of Buccal Cavity. J. Leroux-Robert.—p. 231.

Mixed Tumors of Buccal Cavity.—Leroux-Robert points

out that the stomatologist encounters tumors in the buccal cavity which are designated as "mixed." They are usually observed in the region of the soft palate or of the palatine arch. More rarely they are found on the internal surface of the cheeks or on the lips, only exceptionally on the tongue and still more exceptionally in the region of the sublingual glands. His material comprises 115 cases of mixed tumors of the cervicofacial glands (parotid, submaxillary, soft palate, palatine arch, lips, tongue, nasal cavity, lacrimal glands). Clinically they are mostly tumors that are well defined and well encapsulated. A number of these cases concern patients whose history could be followed for fifteen or eighteen years in the course of the successive relapses. The author analyzes the composing

elements of the mixed tumors: the epithelial elements and the interstitial stroma. Then he takes up the architectural classification of the tumors and finally he discusses the clinical and evolutive characters of these tumors. He concludes that the mixed tumors of the salivary glands are epithelial tumors to be placed in the group of epitheliomas of the glandular parenchyma. This conclusion was imposed by (1) the histologic characters of these tumors which, contrary to the classic opinion, are not tumors of multiple neoplastic strains but rather epithelial tumors which have individuality only because of the importance of modifications which the epithelial elements force the connective tissue to undergo and vice versa; (2) the clinical and evolutionary characteristics of these tumors, which behave like epitheliomas by their tendency to relapses in more than half of the cases, and by their capacity to form metastases. The author refrains from a detailed therapeutic discussion, regarding entirely the treatment of the tumors by radium, but he emphasizes a surgical factor. The mixed tumors must be removed as extensively as possible and not by simple enucleation of the tumor. When it concerns a salivary gland proper, the gland in which the tumor develops must be removed in its entirety.

Sang, Paris

11: 935-1094 (No. 9) 1937

Gastroscopy in Diseases of Blood. P. Chevallier and F. Moutier.—p. 935.

*Bone Marrow in Patients with Nephritis: Hemopoiesis and Definition of Nonprotein Nitrogen in Bone Marrow of Patients with Nephritis. G. Alexieff.—p. 972.

Question of Agranulocytosis Caused by Aminopyrine. E. Filo.—p. 996.

Bone Marrow in Nephritis.—Renal insufficiency, Alexieff says, leads to intoxication, which on the one hand becomes manifest in chemical disorders of the blood and on the other hand provokes a reaction of the hemopoietic organs, and the bone marrow in particular. It is necessary to differentiate between true and false anemia of nephritis. The latter depends on edema of the skin, cutaneous vascular spasms and chiefly on hydreemia, which is like an edema of the blood itself. Even if the cases of false anemia, determined by hydreemia, are excluded, it is still true that anemia exists in the majority of patients with chronic nephritis. This anemia of nephritis is not the result of a hemolytic process. In a minority of cases it develops as the result of a grave hematuria; in the majority of cases the anemia is the result of a deficient erythropoiesis in the bone marrow. The author decided to make an in vivo study of the bone marrow of nephritic patients. He studied the morphology of the bone marrow on dry smears colored by the method of Pappenheim (May-Grünwald-Giemsa). Simultaneously he determined the nonprotein nitrogen in the bone marrow and in the peripheral blood. The investigations were made on twenty-three patients, sixteen of whom had various renal disorders. Of these sixteen nephritic patients, thirteen presented anemia. Studies were made also on dogs with experimental uremia. On the basis of his clinical and experimental studies, the author concludes that: 1. Anemia of nephritic patients is a true anemia due to intoxication of the bone marrow by nitrogenous products. The degree of this anemia is found to correspond not with the azotemia of the blood but rather with the duration of the disease. The study of the bone marrow reveals a feeble regeneration of the normoblastic type which characterizes anhemopoietic anemias. 2. The leukocytosis, which is observed in nephritic patients, just as that of patients poisoned by mercury bichloride, is due to a pronounced regeneration of the myeloid tissue. 3. The number of blood platelets and of megacaryocytes (in the blood marrow), just as their morphologic character, does not show great modifications. The hemorrhagic symptoms that are observed in these patients are not at all dependent on a thrombopenia. 4. The bone marrow cannot be considered as a depot of nonprotein nitrogenous products. 5. Fluctuations in the nonprotein nitrogen content of the blood and bone marrow are about parallel. 6. The cases of intoxication by mercury bichloride are accompanied by a severe azotemia in the bone marrow. In the author's opinion this fact is explained in a satisfactory manner if it is admitted that the mercury bichloride produces a severe irritation of the bone marrow, which provokes a rise in the nitrogenous metabolism with increased formation of nonprotein products.

Minerva Medica, Turin

1: 297-352 (March 24) 1938

- Spontaneous Recovery from Certain Forms of Pulmonary Tuberculosis. O. Maestri.—p. 299.
- Influence of Unilateral Pneumothorax on Preexisting Tuberculosis of Opposite Lung: Study of 200 Cases. U. De Michelis and E. Conte.—p. 312.
- *Effect of Pneumothorax on Contralateral Tuberculosis. V. De Luca.—p. 321.
- Variations of Intrapleural Pressure in Course of Artificial Pneumothorax After Removal of Gas. P. Mino.—p. 330.
- Embolic Chemotherapy According to Bernay's Method in Pulmonary Tuberculosis. A. Locatelli.—p. 331.
- Direct Roentgen Therapy with Small Fields in Pulmonary Tuberculosis. G. Faldella.—p. 337.
- Pulmonary Tuberculosis in Mature and Senile Ages. E. Debenedetti and F. Sardi.—p. 341.

Effect of Pneumothorax on Contralateral Tuberculosis.

—De Luca followed the behavior of contralateral tuberculosis after establishment of unilateral artificial pneumothorax in ninety-nine patients suffering from bilateral pulmonary tuberculosis. The author concludes that unilateral artificial pneumothorax, done on the lung which is most intensely involved by tuberculosis, has a beneficial action on the pneumothoracized and the contralateral lung. The unsatisfactory results of unilateral pneumothorax in relation to lesions in the contralateral lung are due to pleural adhesions. The respiratory trauma at the point of insertion of the adhesion to the parenchyma of the lung is harmful and favors the evolution of tuberculous parenchymal lesions.

Rinascenza Medica, Naples

15: 73-108 (Feb. 15) 1938

- Spirochetal Origin (Spirochaetosis icterohaemorrhagica) of Certain Fevers of Short Evolution Commonly Diagnosed as "Rheumatic Fever." C. Cantieri.—p. 79.
- *Specific Gravity of Urine Test for Functions of Kidneys. M. Sorrentino.—p. 83.
- Late Intracranial Hemorrhage from Trauma. C. Fucci.—p. 87.

Specific Gravity of Urine.—Sorrentino describes a technic for the examination of the function of the kidneys which he calls the test of specific gravity of urine. It consists in the determination of the volume and specific gravity of the urine that is eliminated in twenty-four consecutive hours. The patient, with an empty stomach, urinates at 8 in the morning on the day of the test. This specimen of urine is disregarded. After this the patient urinates at intervals of two hours. The volume and specific gravity of urine are determined immediately after each micturition. The patient voids the first two times while fasting. During the test the patient takes only one breakfast, one dinner and 1 liter of water. Breakfast is given at 12 noon. It consists of meat, bread, fruit and 1 liter of hypotonic water. Immediately after breakfast the patient goes to bed and lies there for four hours, after which he may get up and walk about. He has a dry dinner at 8 p. m. with some fruit but no soup, broth or water. The patient retires at 10 o'clock. All the urine eliminated between 10 p. m. and 8 a. m. of the following morning is put in a vessel and determinations are made as though for a single specimen. When the kidney has a normal capacity of concentration the urine reaches the greatest density of from 1.020 to 1.018. The oscillations between the greatest and lowest density are between 8 and 10 points. When there is insufficient renal concentration the greatest density is much lower than the foregoing figures, and the oscillations between the greatest and lowest densities are from 2 to 5 points. The greater the insufficiency of the kidney for concentration of urine the lower the figures of greatest density and the slighter the difference between the highest and lowest figures. In cases of hyposthenuria the figures of greatest density of the urine vary between 1.003 and 1.001, with slight oscillations between extremes. In moderate renal insufficiency the greatest density of urine is slightly lower than 1.018 and the oscillations between extremes are normal. In common chronic nephritis the changes are just the opposite. The author concludes that the test is simple and reliable. It is of value in the diagnosis of the origin of hypertension (arterial, renal or associated), the type of albuminuria and the intensity of chronic nephritis. The greatest value of the test consists in showing advisability or contraindications for immediate surgical intervention in renal and prostatic diseases. Hyposthenuria in nephrectomized patients as

well as in patients who are suffering from prostatic and bilateral renal diseases contraindicates an immediate surgical operation. The patients are in a condition of oliguria, and azotemia may easily develop if an operation is performed. It is advisable to prepare the patients for the operation, which will be performed when polyuria is reestablished.

Rivista di Clinica Pediatrica, Florence

36: 193-288 (March) 1938

- *Thiemia in Course of Typhoid in Children. I. Biddau.—p. 193.
- Alterations of Right Side of Heart in Late Congenital Syphilis of Lung. A. Barcaglia.—p. 209.
- Fragility of Bones Associated with Dolichostenomelia: Case. Frida Semah.—p. 228.
- Erythremic Myelosis of Cooley's Type: Attempts at Transmissibility in Chickens. G. Hernandez.—p. 252.

Sulfur Metabolism in Children During Typhoid.—Biddau followed the behavior of sulfur in the blood of twenty-one children from 3 to 10 years of age in the course of typhoid. Cultures and blood serum tests gave positive results in all cases. The author found that during the febrile phase of the infection the metabolism of sulfur is altered. The oxidized fraction is slightly diminished, whereas the neutral fraction is much increased. The amount of total sulfur in the blood is slightly increased. The ratio between neutral sulfur and total sulfur in the blood is greatly increased. During convalescence the sulfur metabolism returns to normal. According to the author the changes of the sulfur metabolism in the course of typhoid are due to the following factors: (1) insufficient supply of exogenous sulfur because of lack of appetite of the patient and disturbances of absorption of the digestive tract, (2) increased disintegration of cellular proteins and (3) pathologic involvement of the liver, the adrenals and the spleen with consequent dysfunction of the structures to carry on the processes of fixation and oxidation of sulfur.

Archiv für Kreislaufforschung, Dresden

2: 157-266 (March) 1938

- Clinical Experiences with Electrocardiographic Leads from Thoracic Wall. I. von Zárday.—p. 157.
- Animal Experiments on Condition of Heart During Goiter by Means of Administration of Thyroxine. L. Zeus.—p. 165.
- Animal Experiments on Oxygen Deficiency and Asphyxia. W. Mertens.—p. 192.
- *Hyperergic Thrombo-Endarteritis in Infantile Lung During Eclampsia of Mother. W. Wepler.—p. 210.
- New Method of Thoracic Lead in Electrocardiography by Means of Different and Indifferent Electrode. F. Kienle.—p. 224.

Eclampsia Allergy.—Wepler observed, in the peripheral arteries of the lung of an infant of 3 days, proliferation of the endothelium and secondary fibrinous thrombi. He says that these processes correspond to the vascular changes that are observed in allergic diseases. He regards the severe eclampsia in the mother as the cause of the changes in the lung of the infant. This observation is further corroboration of the theory that eclampsia is an allergic disorder.

Deutsches Archiv für klinische Medizin, Berlin

181: 531-682 (March 19) 1938. Partial Index

- Typical Form of Hypertrophy of Left Side of Heart in Electrocardiogram and Influence of Digitalis on Intermediate Section of Electrocardiogram. E. Dunis, H. Hecht and C. Korth.—p. 539.
- *Behavior of Cutaneous Temperature in Different Types of Diseases, Particularly in Inflammations. O. Scheurer and G. Müller.—p. 566.
- Venous Blood Pressure and Temperature. B. Groß.—p. 579.
- *Investigations on Action of Orally Administered Sulfur. R. Kühn.—p. 588.
- Diagnostic Possibilities of Gastric Mucus. A. Mahla.—p. 595.
- *Is There a Uniform Heredity in Progressive Muscular Dystrophy? S. Kostakow and K. Bodarwé.—p. 611.
- *Treatment of Pneumonia with Quinine-Calcium. R. Ott.—p. 658.

Cutaneous Temperature in Different Diseases.—Scheurer and Müller investigated whether organs with inflammatory processes influence the temperature of the skin above them. They made measurements on more than 100 bedridden patients by means of the thermo-element of Büttner. The instrument was applied to the region immediately after the area was uncovered and the temperature was read on the galvanometer. In measurements on twenty-seven patients with pulmonary tuberculosis, the authors discovered nearly always an increase in temperature on the diseased side, when the process was an exudative or an exudative-cavernous one. As the process

exacerbates, the increase in the cutaneous temperature becomes more noticeable. Cirrhotic processes seem to be without influence on the cutaneous temperature. In lobar pneumonia as well as in bronchopneumonia, the temperature does not show a uniform behavior. However, in new infiltrative processes which are not too far from the thoracic wall, the temperature is nearly always increased. The authors admit that in thoracic processes the measurement of the temperature, although of theoretic interest, is of slight practical value, because the diagnosis of these disorders is possible by roentgenoscopy. In articular diseases, however, the measurement of the cutaneous temperature is of considerable significance. Previous investigators had proved that in acute arthritis, as in tuberculosis and syphilis of the joints, the cutaneous temperature is increased, whereas in chronic articular rheumatism and arthritis deformans it is generally reduced; moreover, that an increase in cutaneous temperature over a joint in cases of chronic polyarthritis often indicates an exacerbation. The investigations made by the authors in articular disturbances revealed practically the same. They think that in articular diseases the measurement of the cutaneous temperature is a valuable aid for the diagnosis, the prognosis and the evaluation of the curative process. The same statement can be made about a number of diseases of the vascular system such as thrombophlebitis and arteriosclerotic gangrene. In inflammations in the abdomen the evaluation of the cutaneous temperatures would be of great importance, but the cited observations indicate that in these cases the behavior of the cutaneous temperature differs considerably. Nevertheless, the noticeable increase in the cutaneous temperature in cases of paranephric abscess, adnexitis, parametritis, dropsy of the gall-bladder and several other disturbances show that the measurement of the cutaneous temperature is a method which, together with other methods of examination, can be of value in the diagnosis of somewhat obscure cases.

Orally Administered Sulfur.—Kühn says that the wide distribution of sulfur in the organism indicates the important role of sulfur in the life processes. The investigations reported in this paper were aimed to determine to what extent the metabolism can be influenced by the oral administration of sulfur. A sulfur preparation susceptible of resorption and containing sulfur in a reduced form was given in different doses to persons who were free from metabolic disturbances. The urine was examined for specific gravity, nitrogen, carbon, sodium chloride and the various sulfur fractions. Bickel's C:N quotient and the elimination of sulfur (particularly neutral sulfur) were taken as indicators of metabolic changes. It was found that the sulfur preparation increased the intermediate metabolism. In this connection the author points out that the same action had been noted by other investigators in the parenteral administration of sulfur.

Heredity in Progressive Muscular Dystrophy.—Kostakow and Bodarwé point out that, whereas most investigators agree that progressive muscular dystrophy is hereditary, the mode of transmission is still a disputed problem. On the basis of a careful study of the literature and of their own investigations on several groups of families, they conclude that progressive muscular dystrophy is always hereditary. Mutations of the hereditary factors of past generations is the pathogenic basis. The hereditary transmission is not uniform. This lack of uniformity is due to the fact that in addition to dominant genes recessive genes have a part. There are two genotypically different forms of progressive muscular dystrophy, an infantile and a juvenile type, both of which are hereditary. The authors show six genealogic trees and list the characteristics of the persons indicated in the diagrams. In two of the family groups, the hereditary transmission was sex linked and recessive and in the four other groups the transmission was of the simple recessive type. In one genealogic tree with recessive heredity a marriage between blood relatives was detected in the ascendancy. In this connection, the authors direct attention to the significance of marriages among relatives for the development of progressive muscular dystrophy from a recessive hereditary factor. In the genealogic trees with the sex-linked recessive heredity the patients are mostly of the infantile type with pseudohypertrophy; in those with the simple recessive heredity there are patients with the infantile and juvenile forms. The

causes of death in the fatal cases were usually disorders of the respiratory organs and in those who survived there was likewise a great susceptibility for the diseases of the respiratory organs.

Quinine-Calcium in Pneumonia.—Ott reports his experiences with quinine-calcium treatment in 125 cases of pneumonia. Thirty-seven of the patients were children less than 5 years old, twenty-three were between 5 and 15 and the others were adults. The children received daily from 1 to 5 cc. of the quinine-calcium according to age; the adults were given 10 cc. daily. The total number of injections was between two and six. In children the mode of injection was always intramuscular. In adults it was at first intramuscular but later intravenous. Discussing the results of the quinine-calcium treatment, the author admits that the main advantage of this treatment, the shortening of the disease process, was realized in only a few cases, but in only twelve of the cases was the treatment begun before the third day of the disease. Although the quinine-calcium therapy did not fulfil all the expectations, the author recommends this treatment particularly at the onset of pneumonia.

Medizinische Welt, Berlin

12: 399-434 (March 19) 1938. Partial Index

Arteriosclerosis and Internal Secretion. K. Tsuji.—p. 401.

Diagnosis and Therapy of Coronary Diseases. E. Wagenfeld.—p. 405.

Statistical Study of Diabetic Cases. Ilse Wetzel-Albers.—p. 409.

*Little Known Cause of Pains in Throat. E. N. von Oettingen.—p. 413.

Pains in Throat.—Von Oettingen directs attention to a comparatively rare cause of recurrent pains in the throat, which readily escapes the ordinary examination and therefore remains often unrecognized. He relates the clinical histories of two patients. The first patient was a man aged 32 who for the last two years had had a hard formation behind the right palatine tonsil, which caused difficulties during swallowing, speaking and turning of the neck. Moreover, the patient complained of increased salivation, a feeling of tension in the right side of the inferior maxilla and tinnitus aurium on the right. Treatment had so far been unsuccessful. On the basis of a thorough examination and of roentgenoscopy, the disorder was finally diagnosed as abnormal prolongation of the styloid process. Following tonsillectomy the styloid process was exposed and a piece 2 cm. in length was removed from the lower end. The patient recovered and the symptoms disappeared. After reporting a second case of abnormally long styloid process, the author says that these cases frequently are not correctly diagnosed because in case of obscure disorders of the neck the examiner neglects the palpation of the oral cavity and the roentgenoscopy of the upper cervical region. The author explains the pathogenesis of such anomalies on the basis of the paleogenesis of the second branchial arch. From the inspection of 500 roentgenograms of the otologic clinic he draws conclusions about the incidence and extent of ossifications in that portion of the former branchial arch which is designated as Reichert's cartilages. His observations indicated that remnants of the hyoid arch can be expected in about 10 per cent of the cases. This percentage is considerably below that of Dondoli (25 per cent). The cause of this difference is still obscure, but the author thinks that racial factors may have a part.

Zeitschrift für klinische Medizin, Berlin

133: 673-790 (March 3) 1938. Partial Index

Reduction of Gastric Acidity by Local Vasoconstriction. W. Raab and V. Klare.—p. 673.

Occurrence and Frequency of Cevitamic Acid Retention in Case of Tolerance Tests. A. Jezler, H. Kapp and F. Ippen.—p. 692.

*Chronic Arsenic Intoxication by Grape Parasiticides. T. Schöndorf.—p. 713.

Influence of Denervation of Kidneys on Masugi-Nephritis. A. Hámori and A. Korányi.—p. 722.

*Acute Nicotine Intoxication in Human Subjects. M. S. Kobro.—p. 734.

*Vitamin B₁ and Carbohydrate Metabolism. P. Gottlieb.—p. 739.

Function of Gastric and Salivary Glands in Diabetes Mellitus With and Without Insulin Treatment. G. Fabian and C. Starck.—p. 747.

Chronic Arsenic Intoxication by Grape Parasiticides.—Schöndorf describes observations on a number of patients whose disorders were found to be the result of chronic poisoning with arsenic. Following a report of the clinical histories of twelve patients, he summarizes the symptomatology of the arsenic intoxication. The hyperkeratosis and melanosis were the

most constant and the most noticeable symptoms. The hyperkeratosis involves the inner surface of the hands and the soles of the feet. The keratotic areas are rough and fissured and a large number of small, hard, wartlike or stalactite-like elevations are visible. The melanosis is found chiefly on the trunk, particularly in the lumbar, inguinal and axillary regions. It appears as a dark brownish pigmentation interspersed with streaks that are free from pigment, so that a reticular outline is the result. In two cases, dark pigmented foci were observed also on the face. Partly as the result of a true polyglobulism and partly caused by a dilatation of the capillaries, the face shows an intense reddishness. This, together with the melanosis, gives the patients such a characteristic appearance that the diagnosis can frequently be based on it. Occasionally, papular eruptions appear on the face. On the whole, the skin is rather dry and atrophic. In the majority of the cases a hepatic impairment was noticeable. The damage to the liver is the most serious symptom of arsenic poisoning. The fatal termination of one of the cases was in the final analysis due to a failure of the hepatic function. Examination of the gastric juice revealed in the majority of cases subacidity and a high leukocyte content indicative of a gastritis. The majority of patients had signs of irritation in the upper and lower air passages. Polyneuritic symptoms were observed in four of the patients. For therapy, the author says emphasis was put on eliminating measures such as sweating cures, wet compresses and baths. When hepatic impairment had been detected, the treatment was the same as in other types of hepatic cirrhosis. Attention was given also to the proper evacuation of the bowels and adsorbents were given. The nature of the disorder was explained to the patients, and efforts were made to prevent further intake of arsenic. The majority of the patients were persons who worked in vineyards and who handled parasiticides containing arsenic. Four of the patients did not handle the arsenical parasiticides, but they too lived in the vineyard region and it is suggested that arsenic in the dust or a grape drink might be responsible. It is probable that an individual hypersensitivity to arsenic has a part in the pathogenesis of the arsenic intoxication because, taking into consideration the extensive use of arsenical parasiticides, the disorder would be more frequent if such was not the case.

Acute Nicotine Intoxication.—Kobro reports the clinical history of a youth, aged 18, a gardener, who developed acute nicotine poisoning after spraying plants in a closed greenhouse with a solution of nicotine sulfate. After spraying 400 liters of a 0.2 per cent solution of the nicotine sulfate in the course of several hours, during which he had inhaled the nicotine-charged air, the patient showed signs of intoxication. There were nausea, vomiting, convulsions and cyanosis. A retardation in the pulse frequency was soon followed by a tachycardia; moreover, there were mild temporary hypertension, increased vasomotor irritability, weak or abolished tendon reflexes, anisocoria and changes in the blood. Following hospitalization the symptoms gradually subsided and the patient was discharged after two days. Discussing the probable mode of development of the different symptoms, the author cites earlier animal experiments and stresses the part played by epinephrine and the suprarenals in the development of the nicotine intoxication.

Vitamin B₁ and Carbohydrate Metabolism.—Gottlieb directs attention to earlier reports on the great importance of the vitamin B complex for the carbohydrate metabolism. Among others, he cites Funk's observation that the symptomatology of beriberi can be exacerbated by the increased intake of carbohydrates and improved by the restriction of the carbohydrate intake. Vogt-Mjller found that the vitamin B₁ requirements in beriberi are in direct proportion to the ingested quantity of carbohydrates. Moreover, excessive intake of sugar has been found to produce clinical pictures similar to the picture of beriberi. After citing animal experiments carried out by a number of investigators the author says that, in view of the disturbances in the carbohydrate metabolism during B avitaminoses, studies have been made to investigate whether vitamin B influences the carbohydrate metabolism in diabetes mellitus. He reviews some of the former investigations and then describes his own studies on the effect of injections of thiamin chloride on diabetic sub-

jects and on persons without metabolic disorders. Investigating the effect of thiamin chloride on the fasting blood sugar of persons with and without diabetes mellitus, he observed a slight reduction in the blood sugar. Further he studied the influence of thiamin chloride on the course of the blood sugar curves of healthy and diabetic persons after dextrose tolerance tests. He observed an increase in the tolerance in the majority of cases. In case of insulin tolerance tests on healthy and diabetic persons, the action of thiamin chloride on the course of the blood sugar curve consisted in an intensification of the insulin action. The author observed further that the administration of thiamin chloride increases the hydrochloric acid secretion of the stomach. He discusses the possibility of a modification of the carbohydrate metabolism by vitamin B₁ by way of the sympathetic nervous system.

Sovetskaya Psikhonevrologia, Kharkov

13:1-120 (No. 7) 1937. Partial Index

- *Insulin Shock Therapy of Schizophrenia. E. K. Krasnushkin and G. M. Khanlaryan.—p. 5.
- Insulin Hypoglycemia and Shock Therapy of Schizophrenia. K. A. Vangengeim and P. L. Magracheva.—p. 23.
- Biothermic Manifestations in Central Nervous System During Epileptic Attacks. I. P. Bobkov.—p. 33.
- Vegetative Disturbances in Lesions of Peripheral Neuron. V. A. Kislov.—p. 42.

Insulin Shock Therapy of Schizophrenia.—Krasnushkin and Khanlaryan point out certain antagonisms between schizophrenia and a number of diseases and pathogenic factors. There is some antagonism between acute infectious diseases and schizophrenia, and on the other hand a tendency to symbiosis with chronic diseases. A pyknic-thymic constitution exhibits an antagonism toward schizophrenia, but the shock producing factors manifest this antagonism in the highest degree. Among these the authors mention physical trauma to the brain, epileptic attacks, strangulation, psychic shock and the agonal state. The convulsion therapy of Meduna and the insulin therapy of Sakel utilize these antagonistic shock producing agents, the first by provoking epileptic attacks with the aid of camphor or metrazol, the second by inducing hypoglycemic shock. The glycopenic states in schizophrenic patients are complicated by certain peculiar psychotic manifestations which in themselves are of a favorable prognostic significance. Among these are a sense of euphoria, syntonía, self analysis and criticism and the disappearance of the constant schizophrenic symptoms. Among other manifestations are motor stimulations, maniacal states, occasionally depressive and hysterical states, and exacerbations of schizophrenic symptoms. According to the authors these manifestations, without actually reaching a comatose or precomatose state, give a favorable prognosis. The authors regard the technique of application of this method entirely safe and the benefits to be derived from it so decided as to consider it entirely permissible. The mortality from the application of the method in the western European clinics amounted to 1 per cent. It is, however, important to bear in mind certain contraindications to the treatment, such as diseases of the cardiovascular system, particularly arteriosclerosis, active pulmonary tuberculosis and nephritis. The authors have treated fifty-two patients by the method, most of them early cases up to one and one-half years in duration, and have noted a high percentage of recoveries and remissions, particularly in the early cases. The most striking results were obtained in paranoid types. The authors observed in most of their cases the development of prolonged (several weeks) hypomaniacal states, exhibiting all the features of manic-depressive insanity, as a transitional phase toward a favorable remission. The patients, at the same time, manifested an improvement in the physical state and a shift toward the physical characteristics of the pyknic constitution. With the aid of orthocardiographic studies, Dr. Lakosin of their clinic was able to demonstrate the change from the vertical position of the heart characteristic for schizophrenia to the dorsal, characteristic of a pyknic constitution. The authors believe that the effective action of insulin therapy is due to two antagonistic factors: (1) the shock-inducing effect of glycopenic attacks, resembling those of epilepsy, and accompanied by anoxemia of the brain cells as it occurs in strangulation, and inducing in its deep states a condition of coma nearing the agonal state, and (2) by stimu-

lation of elements antagonistic to circular constitution, a fact which explains the greater number of remissions in paranoid types, since these exhibit more ingredients of that constitution than other forms of schizophrenia.

Vrachebnoe Delo, Kharkov

20: 81-174 (No. 2) 1938. Partial Index

- Symptoms and Diagnosis of Adhesive Pericarditis. M. Ya. Kalf-Kalif.—p. 93.
Electrocardiographic Studies in Congenital Heart Lesions. B. A. Kogan and I. M. Dubogrey.—p. 99.
*Lobeline Method of Determination of the Rapidity of Blood Circulation. M. M. Evzlina.—p. 113.
Certain Causes of Decompensation in Cardiovascular Patients. M. B. Burgsdorf.—p. 121.
Diagnosis of Early Hyperthyroidism. B. Z. Broder.—p. 123.
*Acidophilus Milk Therapy of Colitis. M. G. Gorin and D. Ya. Rosenberg.—p. 131.

Lobeline Method for Determining Velocity of Blood Circulation.—According to Evzlina, pharmacologic studies established that the stimulating effect of lobeline on the respiratory center is due to its action on the carotid sinus. She performed 140 determinations of the velocity of circulation by introducing into the cubital vein the contents of one ampule (0.003 cc.) of lobeline. This was done on an empty stomach, from one to two seconds being taken for introduction of the drug. This was followed by a reaction consisting of a deep inspiration followed by coughing, which persisted for from five seconds to two minutes. No other phenomena were noted. On the basis of her experience with the method in various diseases as well as in healthy persons, the author concludes that slowing of the velocity of blood circulation constitutes one of the earliest signs of circulatory insufficiency. The method alone cannot be regarded as determining the existence of a failing circulation; the latter is arrived at only after a complex study of all the hemodynamic factors. The lobeline method is to be preferred to all others because of its objectivity, a definite rapidly disappearing reaction, absence of any unpleasant concomitant manifestation, the possibility of repeating the determination within a short time without any harm to the patient, and the uniformity of the results. Patients with a decompensated cardiovascular system exhibit a definite slowing of the velocity of circulation. Successful digitalization is followed by a corresponding increase in the velocity of circulation.

Acidophilus Milk Therapy of Colitis.—Gorin and Rosenberg treated one group of seven patients with chronic diarrhea on the customary antidiarrhea diet for from seven to ten days, after which, if the symptoms were not modified, they added to the diet acidophilus milk. This was taken in three equal portions after meals in doses beginning with 100 cc. daily and increasing by 100 cc. daily until 500 cc. was taken. The same therapy was applied to another group of sixteen patients with the difference that the diet was an ordinary bland sparing diet and not a definitely antidiarrhea diet. The diet alone brought about an improvement in only one case of the first group. After the acidophilus milk therapy, five of the group had formed stools. Diet alone had no effect on the intestinal flora. On the acidophilus milk therapy a part of the patients exhibited a change from a gram-negative to a gram-positive or a mixed flora. The acidophilus milk therapy in the second group of sixteen persons resulted in a clinical cure in nine, improvement in three and insignificant improvement in four. On the indifferent diet a change in the microflora, in twelve investigated cases, took place in four; in one it changed to a gram-positive and in three to a mixed flora. When acidophilus milk was added the flora changed from a gram-negative to a gram-positive in five, became mixed in five and was unaltered in two. Patients who did not exhibit satisfactory improvement from the combination of the acidophilus milk and diet therapy were placed on "acidophile days." The method consisted of keeping patients in bed for from two to three days, all food being withheld except acidophilus milk in amounts of from 1 to 1.5 liters a day. The combination of starvation with the feeding of the acidophilus milk was much superior in its effect to other methods. The authors feel that the element of starvation was an important factor in the results obtained. Diarrhea disappeared and the stools became formed in 75 per cent after the first day, in 82 per cent after the second and in 91 per cent after the third. They feel that "acidophile days" present an advantage over the fast-

ing days advocated by von Noorden because they avoid the loss of calcium, obviate the necessity of subcutaneous injections of nutritive solutions and furnish from 60 to 75 per cent of metabolic needs, while the shift within the intestinal flora to acidosis creates unfavorable conditions for the growth of the putrefactive micro-organisms.

Norsk Magasin for Lægevidenskapen, Oslo

99: 353-456 (April) 1938

- *Wassermann Reaction in Leprosy. E. Gundersen and O. Berner.—p. 353.
Immunity in Syphilis. E. Gundersen.—p. 379.
Norwegian Radium Hospital Through Five Years. S. A. Heyerdahl.—p. 395.

Wassermann Reaction in Leprosy.—Gundersen and Berner state that examination of the serum in twenty-six cases of leprosy (ten tubercular, eleven macular-anesthetic and five of nervous complications) showed a positive Wassermann reaction, also a strongly positive Kahn and Meinicke II reaction, in two cases, one tubercular and one macular-anesthetic. They emphasize, in agreement with Pineda, that a positive Wassermann reaction in leprosy is due to syphilis and ascribe the positive reaction in their cases to a latent syphilis (in one case there was history of syphilis and antisyphilitic treatment).

Ugeskrift for Læger, Copenhagen

100: 303-332 (March 24) 1938

- Attempts with Nitrous Oxide Anesthesia in Labor. E. Rydberg, H. Haldbo and A. Lauridsen.—p. 303.
*Differential Diagnostic Significance of Thrombocyte Count in Certain Forms of Anemia. S. Heinild.—p. 306.
Traumatic Neurosis Combined with Postoperative Neurosis. J. Ravn.—p. 311.
Hypertrophy of Prostate Treated with Gonadotropic Substance. H. Heidemann.—p. 312.

Thrombocyte Count in Anemia.—Heinild made thrombocyte counts in twenty-six cases (seven of pernicious anemia, five of hepatic cirrhosis or hepatic atrophy, seven of achyl-anemia and seven of cancer of the digestive tract). In all cases of pernicious anemia the thrombocyte values were definitely reduced and sometimes extremely low. In all cases of hepatic cirrhosis the thrombocyte count was also below normal; in one instance, in which the picture agreed with that of hepatic atrophy (Geil and Jørgensen), an extreme thrombopenia was demonstrated during three months. In achyl-anemia the blood platelet values were normal. Of the cancer patients five had a definitely increased thrombocyte count and two a normal count; necropsy was performed in the former, while in the latter diagnosis was made after roentgen examination and operation, respectively, which might perhaps indicate that a certain time is needed for the development of thrombocytosis.

100: 333-358 (March 31) 1938

- Hormones of Hypophysis and Their Clinical Significance: Review. C. Holten.—p. 333.
*Infectious Mononucleosis and Meningo-Encephalitis. V. Schmidt and A. Nyfeldt.—p. 336.
Source of Error in Leukocyte Count. J. Engelbreth-Holm and C. C. Winkler Smith.—p. 339.
Quantitative Determinations of Sediment in Urine of Patients with Scarlet Fever. T. Bjerring.—p. 342.
Hydatid Mole with Chorion Epithelioma: Case. A. W. Mortensen.—p. 344.
Method for Rapid Establishment of Hypoproteinemia with Glass Bead. J. Bing.—p. 346.
Treatment of Pyelitis with Granulatum Calcii Amygdalatis: Report from Practice. E. A. Kirketerp.—p. 347.

Infectious Mononucleosis and Meningo-Encephalitis.—In the first of the five cases of infectious mononucleosis described there were signs of meningitis on admission. Hence spinal fluid was examined in the other four cases, although no clinical signs of any infection in the central nervous system were seen on admission. The first four patients all gave positive agglutination in the blood with sheep blood corpuscles and growth of *Listeria* in the cerebrospinal fluid. In view of these cases Schmidt and Nyfeldt suggest that examination of the cerebrospinal fluid would be advisable in patients with infectious mononucleosis, especially considering the demonstrated late infection of the central nervous system. Treatment should accordingly be extended beyond the usual clinically demonstrable infectious stage, because of possible sequels in the form of chronic changes due to the involvement of the central nervous system in infectious mononucleosis.

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EXCRETION OF SULFANILAMIDE

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The drug para-amino benzene sulfonamide, or sulfanilamide, and its related compounds is in wide use at the present time in the treatment of certain infections. Its usage rests largely on an empiric basis, and much remains to be learned about the bacteriologic and pharmacologic aspects of the drug. The present study is concerned with factors governing the excretion of sulfanilamide when administered in treatment.

In a group of patients without cardiovascular, hepatic or renal disability, and without infection, a measured amount of sulfanilamide was given daily at six hour intervals for from three to six days. With each dose of sulfanilamide three fourths as much sodium bicarbonate was given. Complete collections of urine were made in each case and an aliquot sample of the daily total was used for determinations. The intake of fluid was carefully measured, and the patients drank as desired. The regular hospital house diet was taken during the study. Venous blood was drawn under oil without stasis at the beginning and at appropriate intervals during the course of the study, analyses being made for nonprotein nitrogen, serum bicarbonate, serum chloride, oxygen capacity and sulfanilamide content of whole blood. At the end of from three to six days the administration of sulfanilamide was stopped, the last dose being given at 3 a. m. Six hours later the study of urinary excretion in two periods under fasting conditions was begun. During the first period of two to three hours no fluid was taken. During the second period of similar duration the patient drank all the water he could take without discomfort, the amount being in the different cases from 500 to 1,100 cc. Thus the urinary excretion of sulfanilamide in two periods was determined, in the second period there being a larger urine volume in consequence of water drinking. Blood analyses were made before the first period. It was found that the sulfanilamide level in the blood did not vary significantly if determined again at the end of the first period; hence this determination was usually not repeated. Daily collection of urine was continued until only traces of sulfanilamide were recoverable in the samples. The fall in blood concentration also was studied.

The cases were carefully studied for complications, but this phase of the subject will not be discussed here. It should be said however that, although all the patients became mildly cyanotic, none showed any serious complication or distressing symptoms.

Standard analytic procedures were used. Sulfanilamide in both its free form and its acetylated or conjugated form was determined in blood and urine by the technic developed by Marshall.¹

PRESENTATION OF DATA

In table 1 are shown data on the total recovery of sulfanilamide in the urine during the study, the average being 93.2 per cent. In case 6 loss probably occurred through a freely draining cholecystostomy wound. In case 7 a rather copious diarrhea did not result in loss of sulfanilamide. Since the urine still contained small amounts of sulfanilamide in these cases at the end of the study, it is possible that an even more complete recovery of the administered drug could have been made.

In the chart are shown graphically data obtained in a typical case (case 5). The total recovery of sulfanilamide in the urine was 97 per cent. The duration of the study was eight days, the sulfanilamide being taken for the first five days. In three days equilibrium had been established between intake and output of the drug, and the blood concentration stabilized. The rapidity with which sulfanilamide is eliminated from the body through the urine is well shown.

In table 2 are shown data demonstrating the effect of water diuresis on urinary excretion of sulfanilamide. Clearances in cubic centimeters of blood per minute are computed for free and conjugated sulfanilamide for first the period of water abstinence and then of water drinking. The percentile change in rate of excretion of urine and of sulfanilamide is expressed for each case, and the averages for all cases are also given.

Table 3 contains data on concentrations of conjugated, free and total sulfanilamide in blood and urine during the period of moderate reduction in rate of formation of urine resulting from abstinence from water.

COMMENT

The high recovery of sulfanilamide in the urine shown in table 1 demonstrates the accuracy of the analytic technic in convincing fashion. The great importance of the kidney in dealing with the drug is apparent. It is possible to infer what clinical experience has already taught: sulfanilamide must be used cautiously and in smaller doses in the presence of renal disability. The completeness of absorption of sulfanilamide from the gastrointestinal tract and negligible excretion in the feces, even with diarrhea, is apparent.

From the Surgical Laboratories of the Harvard Medical School at the Massachusetts General Hospital.

1. Marshall, E. K., Jr.: Determination of Sulfanilamide in Blood and Urine, *J. Biol. Chem.* **122**: 263 (Dec.) 1937.

Another point of practical significance is the variability of blood level in different patients resulting from similar doses of the drug per pound. The need for doing frequent blood determinations in patients under intensive therapy is clear.

In considering the clearance data in table 2, the much more rapid clearance of conjugated sulfanilamide than free sulfanilamide is interesting. The exact meaning of this observation is not clear. The site in the

TABLE 1.—*Recovery of Sulfanilamide in Urine*

Case	Weight, Kg.	Dosage		Days	Maximal Blood Level		Total Recovery, %	Notes	
		Gm. per Day	Total, Gm.		Conjugated, Mg. per 100 Cc.	Free, Mg. per 100 Cc.		Vomit-ing	Stools
1	54.6	6.40	19.47	3	2.4	13.8	97.1	0	2
2	80.9	7.94	23.81	3	4.6	16.6	93.5	2	1
3	54.6	6.49	19.47	3	2.4	7.4	91.7	0	0
4	63.6	7.79	23.37	3	3.4	15.2	92.1	0	1
5	72.7	5.18	25.99	5	0.2	11.2	97.0	1	3
6	50.0	3.89	15.56	4	3.2	8.1	88.8	0	6
7	49.8	3.89	15.56	4	1.5	4.4	97.8	0	16
8	62.7	4.54	18.16	4	1.6	8.6	88.2	1	2
9	64.1	4.54	22.70	5	1.1	10.5	96.1	0	2

body at which acetylation of sulfanilamide takes place is as yet unknown. Were the process carried on in the kidney, a discordantly high clearance computation might result. On the other hand, since acetyl sulfanilamide is a quite different molecule from para-amino benzene sulfonamide, its rate of reabsorption in the renal tubules may be much slower, from which a more rapid clearance would result.

TABLE 2.—*Secretion of Urine and Clearance Rate*

Case	Blood Sulfanilamide		Urine Rate, Cc. per Min.	Clearances		Time, Min.
	Conjugated, Mg. per 100 Cc.	Free, Mg. per 100 Cc.		Conjugated	Free	
1	2.4	13.8	0.43 2.01 +367%	58.1 77.9 +34.1%	15.6 17.2 +10.3%	163 182
2	4.6	16.6	0.59 0.69 +16.9%	30.1 46.2 +53.5%	18.2 17.9 -1.6%	160 180
3	2.4	7.4	0.62 1.24 +100%	50.4 57.8 +14.7%	22.7 19.4 -14.5%	156 176
4	3.4	15.2	0.33 0.65 +100%	38.5 56.1 +45.7%	11.2 22.2 +100%	152 174
5	0.2	11.2	0.28 0.32 +14.3%	344 430 +25.0%	9.3 9.9 +7.0%	150 150
6	3.2	8.1	0.32 0.42 +31.3%	27.3 35.8 +31.1%	11.4 16.5 +45.2%	180 180
7	1.5	4.4	0.45 2.35 +422%	72.8 95.2 +30.8%	29.2 54.3 +17.5%	180 180
8	1.6	8.6	0.46 0.51 +10.9%	78.3 81.3 +3.8%	13.5 13.9 +3.0%	150 150
9	1.1	10.5	0.31 0.42 +35.5%	105.0 140.0 +33.4%	13.1 19.2 +46.6%	150 150
10	0.8	7.3	0.41 0.70 +70.7%	107.0 140.0 +30.8%	21.3 23.9 +12.2%	140 150
Average percentile change.....			+116.8%	+30.3%	+22.5%	

The rate of secretion of urine and clearance rate in each case are given first for the period of water abstinence and then for the period of water drinking. Percentile change with diuresis is recorded in each case. Clearance values are given as cubic centimeters of blood cleared per minute.

Diuresis results in an increased rate of excretion of both free and conjugated sulfanilamide, though the increase is not proportional to the increase in rate of the formation of urine. On this point our conclusion checks with that reached by Marshall and his collabora-

tors.² This brings out that it is more difficult to maintain a high blood concentration of sulfanilamide on a given dosage if the volume of urine is large. However, in view of the great importance of the kidney in affording the sole exit of the drug from the body, an abundant volume of urine seems desirable while the drug is being taken. Furthermore, a generous intake of fluid is usually indicated in treating the infection for which sulfanilamide is given.

No definite correlation between clearance rate of either free or conjugated sulfanilamide and blood concentration is discernible. We cannot agree with Marshall that the amount of the acetyl derivative excreted seems to depend on the amount present in the blood.¹ The clearance rate seems to depend a good deal on the particular renal response of the individual

TABLE 3.—*Conjugated, Free and Total Sulfanilamide Concentrations in Blood and Urine During the Period of Water Abstinence*

Case	Blood, Mg. per 100 Cc.		Urine, Mg. per 100 Cc.	Vol. Cc.	Duration, Min.	Case	Blood, Mg. per 100 Cc.		Urine, Mg. per 100 Cc.	Vol. Cc.	Duration, Min.
	c.	f.					c.	f.			
1	2.4	13.8	310.6	70	163	6	3.2	8.1	271.0	58	180
	t. 16.2	t. 81.9	502.4				t. 11.3	t. 557.9			
2	4.6	16.6	282.6	94	100	7	1.5	4.4	241.5	82	180
	t. 21.2	t. 795.0	512.4				t. 5.9	t. 522.5			
3	2.4	7.4	194.7	97	150	8	1.6	8.6	253.5	77	150
	t. 9.8	t. 464.9	270.2				t. 10.2	t. 486.0			
4	3.4	15.2	391.8	51	152	9	1.1	10.5	360.0	64	150
	t. 18.6	t. 900.0	508.2				t. 11.6	t. 532.0			
5	0.2	11.2	269.0	42	180	10	0.8	7.3	269.5	61	140
	t. 11.4	t. 617.0	347.9				t. 8.1	t. 590.0			

to the drug, thus making for variability and indicating again the need for frequent determination of blood concentrations in clinical usage.

A question might be raised about the method of calculating clearances in this study. As previously noted, in several instances blood concentrations of sulfanilamide were determined not only at the beginning of the period of water abstinence but again at the end, before water drinking began. No significant difference was detectable. In several clearance studies, not under discussion here, the level of sulfanilamide in the blood was determined at the beginning of the period of water abstinence, at the beginning of the period of water diuresis immediately following the first period, and at the end of the period of water diuresis. No appreciable difference in blood concentrations was observed, although the patients under study had blood concentrations of less than 10 mg. per hundred cubic centimeters. We feel that in the present study clearance computations would not have been significantly altered if based on terminal as well as initial blood concentrations, though such a method is preferable.

The data in table 3 relate to a point of considerable importance. While collecting urine for clearance determination in case 4 during the period of water abstinence it was noted that a precipitate was forming in the indwelling catheter. Studies on this sample of urine showed that sulfanilamide, chiefly in the acetylated form, was crystallizing out in the indwelling catheter. The solubility of sulfanilamide in water at

2. Marshall, E. K., Jr.; Emerson, Kendall, Jr., and Cutting, W. C.: The Renal Excretion of Sulfanilamide, *J. Pharmacol. & Exper. Therap.* 61: 191 (Oct.) 1937.

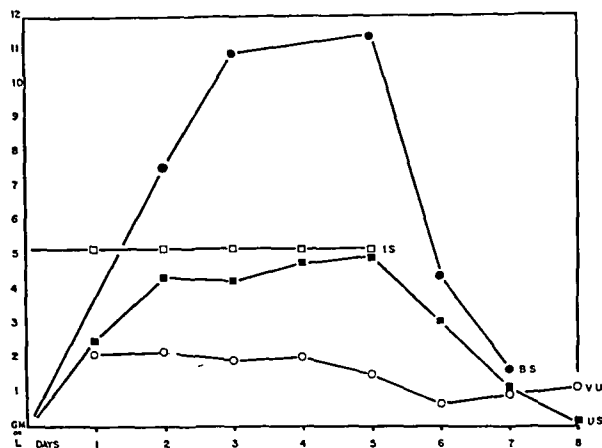
room temperature is less than 0.8 per cent, while at body temperature it is only about 1.1 per cent.³ Acetylated sulfanilamide we find considerably less soluble.⁴ Urinary concentrations were in these ranges in the cases under study. No data on solubilities of free and acetylated sulfanilamide in urine are available, but in several instances we have observed precipitation of acetylated sulfanilamide in urine at room temperature soon after collection. Urine at body temperature would certainly have greater power to hold the drug in solution, but nevertheless the possibility of stone formation in the urinary tract or blockade of renal tubules, where large doses of the drug are given and urine volume is small, seems real. This subject is being studied further.

SUMMARY

1. Recovery of administered sulfanilamide has been studied on a quantitative basis in patients without cardiovascular, renal or hepatic disease and without evidence of infection.

2. Rates of clearance through the urine of conjugated and free sulfanilamide of the blood have been determined.

3. The effect of water diuresis on rate of clearance of conjugated and free sulfanilamide has been investigated.



Sulfanilamide balance study in case 5. IS, sulfanilamide intake in grams per day; US, sulfanilamide content of urine in grams per day; IU, daily urine volume in liters; BS, total sulfanilamide concentration of whole blood in milligrams per hundred cubic centimeters plotted on the ordinate scale.

4. Concentrations of conjugated and free sulfanilamide in blood and urine during a period of water abstinence have been noted.

CONCLUSIONS

1. In man sulfanilamide is excreted almost entirely by the kidneys, in either the free or the conjugated form.

2. The concentration of free and conjugated sulfanilamide in the blood resulting from a given per pound dosage is quite variable in different individuals; hence the importance of frequent determinations of blood level during intensive therapy with the drug.

3. After sulfanilamide has been stopped the drug is rapidly eliminated from the body, provided renal function is normal and urine volume adequate.

3. Allport, N. L.: Para-Amino Benzene Sulfonamide. *Quart. J. Pharmacy & Pharmacol.* 9: 560 (July-Sept.) 1936

4. Unpublished data.

4. The concentration of conjugated sulfanilamide in the blood is much lower than that of the free sulfanilamide.

5. The rate of clearance of conjugated sulfanilamide is greater than that of free sulfanilamide.

6. Water diuresis increases the rate of urinary excretion of both forms of the drug.

7. The precipitation of excreted sulfanilamide in urine at room temperature has been demonstrated, suggesting the possibility of formation of stones in the urinary tract should urine volume become too small during sulfanilamide therapy.

USE OF SULFANILAMIDE AFTER TRANSURETHRAL PROSTATECTOMY

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The successful results that have accrued from the use of sulfanilamide in the treatment of infections of the urinary tract have prompted a survey of its utility in postoperative management of cases in which transurethral prostatic resection has been performed.

At least half of the persons presenting themselves for this operation have grossly infected urine. Only rarely do we endeavor to treat such infections prior to operation. Postoperative febrile reactions which may be traced to such infections occur infrequently in our cases and we believe that the offending bacterial organisms responsible in cases manifesting febrile reactions were probably introduced at operation and are not strains of bacteria previously harbored by the patient.

The study promised to be attractive because it was of a group of persons of the same sex, of approximately the same age, and all suffering from an obstructive lesion which gave rise to a similar sequence of clinical and pathologic events. The number of patients was sufficient to group into a control series and an experimental series, each to receive substantially identical treatment with the exception of the urinary antiseptic concerned.

The average period of postoperative hospitalization of the patients was five days and therefore it was decided that specimens of urine should be collected for examination at the time of operation and on the fifth postoperative day. Administration of the drug was begun on the morning of operation and was continued until the fifth day after operation.

COLLECTION AND BACTERIOLOGIC STUDY OF THE URINE

Each specimen of urine was obtained by catheterization under aseptic technic on the first and fifth days. The specimen was kept in the ice box until cultures were taken from four to six hours later. After the sample of urine had been mixed thoroughly, seedings were made on the surface of blood agar plates; these were incubated for twenty-four hours at 37.5 C. Subsequently, smears of the colonies growing on the plates were made and were stained by Gram's method and the results were recorded under the three broad headings

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of gram-negative organisms, streptococci, including diplostreptococci, and micrococci, including staphylococci.

ADMINISTRATION OF SULFANILAMIDE

Every other patient admitted to the hospital was given the drug, and the alternate patients were used as controls. Discrimination was not made as to which patients should receive sulfanilamide. The dose ranged

TABLE 1.—Results of Culture of Urine on Day of Operation and on Fifth Postoperative Day

Results	Transurethral Prostatectomy, Thompson, 1934, 200 Cases, per Cent	1937 Series	
		Control, 100 Cases, per Cent	Sulfanilamide, 100 Cases, per Cent
1. Same organisms on first and fifth day	36	33	16
2. Culturally negative throughout	11.5	15	25
3. Change in bacterial flora between first and fifth day .....	....	14	16
4. Additional organisms on fifth day not present initially, excluding those itemized in 3.....	....	36	32
5. Organisms not present on first day but found on fifth day; items 3 and 4 together	47	50	48
6. Became culturally negative..	5.5	7	20
Types of organisms found on fifth day:			
Gram-negative organisms..	42	34	16
Streptococci	32	23	12
Micrococci	30	34	31

between 45 and 60 grains (3 and 4 Gm.) daily, and the majority of the patients receiving this medication also were given a similar amount of sodium bicarbonate. No effort was made to establish a urine of a particular hydrogen ion concentration.

Because of nausea, cyanosis, skin reactions and even low grade fever, it was necessary to discontinue administration of the drug in nine cases. We present data on 100 patients who received sulfanilamide and an equal number, the control group, who received no urinary antiseptic whatever. We have available for comparison the bacteriologic observations in a similar group of 200 cases of transurethral prostatectomy compiled by Thompson¹ in 1934.

Table 1 brings out the close similarity as regards both the number of specimens of urine infected and how these infections behaved during the stage of post-

TABLE 2.—Summary of Bacteriologic Observations

	Control Series, per Cent	Sulfanilamide Series, per Cent
Infected urine, day of operation.....	48	51
Infected urine, five days after operation....	77	55
Uninfected urine, remaining sterile.....	15	25
Uninfected urine, becoming infected.....	28	18
Infected urine, becoming sterile.....	7	20

operative hospitalization. Further, the types of organisms found in the series of 1934 were substantially as frequently encountered then as in 1937.

The sulfanilamide series brings out two apparent changes that we will mention at this time. First, there seems to be some general bactericidal action directed toward those organisms originally present in the urine. Second, a greater percentage of initially "sterile" urines remain culturally negative.

To proceed with a general survey of the results of administration of sulfanilamide on the urine, table 2 illustrates the infected (culturally positive) and the sterile (culturally negative) specimens of urine and their behavior during the course of the experiment.

Table 2 shows that an equal number of patients have infected urine initially in the respective groups. Five days later, however, among those patients receiving sulfanilamide, there is a drop in the percentages of infected specimens of urine and a larger number of uninfected specimens remain "sterile."

At this point we should discuss two important facts brought out by the two tables. First, in table 1, as indicated already, there seems to be some general bactericidal action directed toward those organisms originally present in the urine. A consideration of side headings 3, 4 and 5 shows that this does not seem to be true of additional organisms that have become established in the urine following operation. There is no significant difference in the percentages of these newcomers in the control series as compared with the sulfanilamide series.

There occur to us two possible explanations: 1. The additional organisms are contaminants. This we cannot believe, because the organisms now in the fifth day

TABLE 3.—Organisms Present in Urine on Fifth Day

	Control Series, per Cent	Sulfanilamide Series, per Cent
Organisms present on culture on fifth day:		
Gram-negative bacteria	34	16
Streptococci	23	12
Micrococci	34	31
Uninfected urine, became infected with:		
Gram-negative bacteria	35	18
Streptococci	32	20
Micrococci	46	58

urines were found in numbers easily demonstrated by Gram's stain of the urinary deposit, thus excluding the probability of their being contaminants introduced at the time of collection of these samples. 2. On the other hand, we might postulate that this drug acts not only as a bactericidal agent alone but also in some way reinforces the mechanism of immunity operating against chronic infection. The new invader, introduced at the time of operation, has not had time, within the limits of the experiment, to call forth a defense reaction on the part of the host and therefore it has only the bactericidal action of the drug to contend with. Clinical experience in the management of urinary infections would lead us to believe that administration of sulfanilamide is frequently followed by a more dramatic improvement in the chronic infection than we observe among cases of acute infection. The mechanism of operation of sulfanilamide as yet is unsettled. The hypothesis that it acts by stimulation of some mechanism closely related to the natural immunologic defenses of the subject has been expressed by many writers, particularly those in England and on the continent of Europe. Our evidence seems to confirm this hypothesis.

In table 2 the second item might indicate that sulfanilamide inhibits establishment of organisms in the urinary tract. This, however, would be an erroneous conclusion as reference to table 1 demonstrates. It is not necessarily specimens of urine from the same

1. Thompson, G. J.: The Prevention of Complications of Transurethral Prostatic Resection, Urol. & Cutan. Rev. 38:847-851 (Dec.) 1934.

patient, found to be infected on the day of operation, that we find infected on the fifth postoperative day.

The survey, up to the present, would indicate that a group of these patients, as a whole, would benefit from routine administration of this particular urinary antiseptic. It behooves us, therefore, to study the more detailed results of this therapy. In table 3 an analysis of the type of organisms present on the fifth day is presented.

The results of the cultures of these fifth day specimens would indicate that the effect of sulfanilamide is directed toward both gram-negative bacteria and streptococci and that the efficacy of this antiseptic in suppressing both of these organisms is about the same. Micrococci were found in about a third of the specimens examined irrespective of sulfanilamide.

Furthermore, micrococci found in the urine on the fifth postoperative day were not found in the urine prior to operation in 79 per cent of the sulfanilamide series and in 71 per cent of the control series. So far as these bacteria are concerned, they appear quite unaffected by administration of sulfanilamide. In the specimens of infected urine obtained five days after operation that were found to harbor micro-organisms not demonstrated in cultures of urine obtained on the day of operation, bacteria were demonstrated as shown in table 4, which gives the relative frequency with which these new invaders occurred in specimens of urine collected on the fifth postoperative day.

TABLE 4.—Frequency of New Invaders Present in Urine on Fifth Postoperative Day

Organisms	Control Series, per Cent	Sulfanilamide Series, per Cent
Gram-negative bacteria	45	57
Streptococci	84	73
Micrococci	71	79

We can only conclude from these results that strains of organisms gaining foothold after operation are not influenced by administration of sulfanilamide, although it would seem, from earlier tables, that the actual number of infected specimens is decreased following its administration.

A discrepancy was found between cultural results and microscopic examination of the sediment obtained by centrifuge in a number of the specimens. Pus cells in these specimens were demonstrated; however, there was no evidence of bacteria on culture. Without disputing the concept of amicrobic pyuria, it is evident that such observations must be laid to faulty technic in culturing the organisms, but the interesting fact is that this discrepancy is nearly four times as frequent in the group receiving sulfanilamide (table 5) as in the control group.

This considerable group of purulent specimens found to be culturally negative in the experimental series makes us doubt that they are, indeed, really sterile. We must neglect for the moment the considerable number of "amicrobic pyurias" in the control group and seek some explanation of this phenomenon of increase in the number of such specimens in the sulfanilamide group.

All the patients in this group received the drug up to the time when the second specimen of urine was collected and we are faced with the possibility that excretion of sulfanilamide in the urine of these subjects effected a bacteriostatic influence when it was attempted to culture these specimens on the usual mediums.

It has already been pointed out that, in a number of instances, it had been necessary to discontinue sulfanilamide and, in table 6, an attempt has been made to correlate the bacteriologic observations with administration of the urinary antiseptic in these cases.

The differences in the amounts of the drug given were quite insignificant and cannot explain the changes noted in the status of the specimens of urine. Of the nine cases in which it was necessary to discontinue use

TABLE 5.—Pyuria

	Control Series, per Cent	Sulfanilamide Series, per Cent
Purulent urine with negative cultures.....	12	44
Purulent urine with positive cultures.....	88	56

of sulfanilamide because of undesirable sequelae, four remained sterile throughout, three originally negative culturally became infected, and two of the specimens originally infected became negative on culture, five days after operation.

COMMENT

If there is any case for sulfanilamide, as used in the present series, it would seem to rest on a very frail foundation. We have failed to prove conclusively that there is a reduction in the number of infected specimens of urine after the drug has been taken for five days. The observation that the urine specimens of patients who were taking sulfanilamide give a higher percentage of negative cultures than do those of the control group is not necessarily conclusive. It means only that the methods used in this study for demonstration of the infecting organisms were inadequate. It would be necessary to allow several days to elapse after discontinuing the drug before the urine then obtained could be pronounced culturally negative. It is entirely possible that the presence of sulfanilamide in the specimens of urine that were cultured exerts a bacteriostatic effect and the methods of culture which were employed could not, therefore, exclude viable organisms.

The case against sulfanilamide as a routine urinary antiseptic in such postoperative cases is supported by the nine instances in which undesirable reactions have

TABLE 6.—Correlation of Bacteriologic Observations with Dosage of Drug

Bacteriologic Observations	Average Total Dosage of Sulfanilamide, Grams
Uninfected urine remaining sterile.....	156
Uninfected urine becoming infected.....	149
Infected urine becoming sterile.....	163
Purulent urine with positive cultures.....	150
Purulent urine with negative cultures.....	140

occurred. The reactions observed in these nine cases were sufficiently grave to require us to discontinue administration of sulfanilamide to the subjects concerned. Because all the patients were hospitalized for the duration of the experiment, it was permissible, therefore, to persevere with the drug in the face of what would constitute a contraindication to its use under less ideal conditions. Mild reactions occurred in a number of other cases but in these nine the reaction was severe enough to require withdrawal of the drug. It should be emphasized again that sulfanilamide is a

drug not without danger, especially when administered to the elderly patient. Its use as a routine urinary antiseptic in postoperative cases is to be deprecated.

The urinary infections that exist before operation or develop afterward are, in actual experience, very rarely the cause of anxiety. Certainly a stormy convalescence owing to such infections had a much lower incidence than did undesirable reactions to sulfanilamide. Actually, in the present series, there were only three patients in each of the groups in whom febrile reactions ensued that could be regarded as characterizing a mildly stormy convalescence.

CONCLUSIONS

A study of the efficacy of sulfanilamide as a urinary antiseptic in the postoperative management of 100 cases of transurethral resection has been made.

A control series of a similar number of cases was studied concurrently.

Our experience has not demonstrated a sound basis for administration of sulfanilamide in routine postoperative management of these cases. In fact, the unfavorable reactions from it may hinder convalescence.

It is our opinion that the results of its administration in other types of surgical cases wherein the drug is expected to act as a urinary antiseptic will be similar to ours. Its routine use, therefore, seems unwarranted.

THE USE OF BENZEDRINE SULFATE IN POSTENCEPHALITIC PARKINSONISM

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Benzedrine has been referred to in the literature by many chemically descriptive terms such as benzyl methyl carbinamine, alpha methyl phenylethylamine, beta phenylisopropylamine, phenylaminoethanol and beta aminopropylbenzene. We shall confine ourselves to the use of the trade name benzedrine sulfate in future reference.

Pharmacologic studies¹ have shown that benzedrine has a more profound central stimulating action on the central nervous system than either epinephrine or ephedrine. Its action has been estimated to be sustained from two to eight times as long as that of ephedrine. Its central effect is probably due to an increased cerebral blood flow and a possible chemical action on the brain itself.² Its action as a vasopressor causes the blood and spinal fluid pressures to increase.³ The use of the parasympathetic paralyzants, hyoscyamus, belladonna and stramonium enhances the sympathetic stimulating action of benzedrine, thereby increasing its pressor effects. Dameshek⁴ has shown an increased erythrocyte count during the use of this drug. Lagen,

Soley and Leake⁴ have reported an increase in the basal metabolic rate in a small series of cases.

Extremely good results have been obtained in persons in a depressed mood, in those who are easily fatigued and in the chronically exhausted and self absorbed.⁵ Following the administration of benzedrine, an improvement of more than 8 per cent had been noted in intelligence scores.⁶ Benzedrine sulfate has proved ineffectual in catatonic stupors.⁷ Favorable results have been obtained in anchoring the symptoms of those suffering from orthostatic hypotension.⁸ In some cases of myasthenia gravis, good results have been obtained by the use of benzedrine as a supplement to prostigmine therapy.⁹ Benzedrine has been reported to be three times as effective as ephedrine in narcolepsy and has afforded almost complete relief from cataplectic symptoms.¹⁰ In some of these cases in which ephedrine proved inactive even in large doses, benzedrine was effective in small doses.

Recently reports of small series of cases¹¹ have tended to show the effectiveness of benzedrine sulfate in postencephalitic parkinsonism. They have shown that the useful action of this drug is chiefly on the subjective symptoms, although 100 per cent of the patients suffering with oculogyric crises were relieved. Likewise in 100 per cent of the cases an increase in energy and disappearance of drowsiness was noted. The strength and muscular rigidity were also favorably affected, though to a less degree. In a disease respecting neither age nor sex, which marches so gradually and relentlessly to progressive helplessness, a drug which may stay its progress or offer some relief is worthy of trial. It was with this purpose in mind that we began this study in July 1936.

From the neurologic wards and the outpatient department of the Philadelphia General Hospital, ninety cases of parkinsonism were chosen for our study. In only seventy-four of these cases were we able to complete our observations, owing to discharges and transfers of seven ward patients and to the lack of cooperation of nine of our clinic patients. We feel satisfied that in

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seventy-one of these cases the etiology of the parkinsonian syndrome is chronic epidemic encephalitis. In three, the possibility that the parkinsonism is of the idiopathic type must be considered but, as it is well recognized that the differential diagnosis is frequently impossible to establish and since here the evidence was in favor of the postencephalitic type of the disease, we feel that these cases could be included.

The range of age was from 15 to 68 years. There are three patients under 20 years of age, seventeen in their twenties, twenty-four in their thirties, nineteen in their forties, eight in their fifties and three in their sixties. There were forty-three men and thirty-one women.

TABLE 1.—*Sixteen Cases with Blood Pressures More Than 130 Mm. of Mercury*

	Number of Cases
Blood pressure decreased	10
Blood pressure increased	3
Blood pressure unaffected	3

A preliminary clinical survey was made in each case, including a complete neurologic examination in which an attempt was made to record the degree of severity of each manifestation of the disease as accurately as possible. Strength of grip was tested with the dynamometer. Each patient who was able to cooperate was given a sheet of paper on which he wrote his name, a short sentence and a series of numbers and copied a few conventional figures; namely, a square, a triangle and the like. In addition, motion pictures of ten ambulatory patients were taken.

During the course of the treatment with benzedrine sulfate, our patients reported weekly on their subjective symptoms, observations as to any change in their physical status were noted and frequent determinations of the blood pressure were made. At the end of the experimental period, in addition to a physical check-up, the subjects were asked to repeat the writing and copying tests, the strength of grip was again tested, and motion pictures were taken of the same patients.

Two doses of benzedrine sulfate were given daily, the first at 8 a. m. and the second at noon. The age and systolic pressure of the patient were used as determining factors in prescribing the initial dose. Young people with systolic pressures of 130 mm. of mercury or under were given doses of 60 mg. daily, 30 at 8 a. m. and 30 at noon. Those persons with systolic pressures over 130 mm. of mercury, and a few people of advanced years, were given only 40 mg. a day, and this dosage was maintained throughout the experiment. Fifty-eight patients were given 60 mg. of benzedrine sulfate a day, while sixteen were given 40 mg. a day.

Since it is practically impossible to withdraw classic medication such as scopolamine and stramonium from the patient with chronic encephalitis once he has become accustomed to these drugs, it was thought advisable to continue any medication that the patient was receiving at the time of the preliminary examination and to consider the signs and symptoms that were elicited while the patient was taking his usual dose as normal for his condition. We therefore did not alter the previous regimen of the patient but merely prescribed the suitable dose of benzedrine sulfate and observed what changes were produced by the administration of benzedrine sulfate. Although prompted by necessity, we felt that there was some justification for this technic, as it might give

us some data on the synergic effect of benzedrine sulfate with the atropine group in this disease.

Twenty-nine of our patients were taking no drugs at all before the study was begun. Of the forty-five who were accustomed to medication, thirty were taking stramonium, ten were taking scopolamine and two were taking atropine. Three were taking both atropine and scopolamine. The dose of these drugs was at no time increased during the course of the study.

As others have observed, the most remarkable and uniform effect of benzedrine sulfate in postencephalitic parkinsonism is in the subjective sphere. All but eight patients felt definitely improved. The majority reported a decrease of fatigability and somnolence with a definite increase in energy and mental alertness associated with a sense of well being. Many were able to resume responsibilities that they had been incapable of for months and years. Several practically helpless patients started feeding themselves with a moderate amount of success, and one woman who had been bedridden for almost two years was able to get out of bed and helped to dress herself.

However, evaluating our results, we placed much more weight on objective evidence than on subjective evidence of the action of this drug. Most physicians have witnessed at some time or another the effect of a strong emotion on the postencephalitic patient and have been amazed at the extent to which the otherwise board-like extremities can be driven into activity. These spurts of activity, emotionally driven, are of course of very short duration, but even so they are striking enough to make one demand something more concrete when one is evaluating results with any form of treatment.

Therefore, while sixty-six of our patients reaped definite subjective benefit from the use of benzedrine, from the objective standpoint we were satisfied with the improvement of only fifty-three of the cases. The most striking result was the effect on the oculogyric crises. Only twenty-three of the patients showed this symptom, and in every case the attacks were reduced

TABLE 2.—*Fifty-Eight Cases with Blood Pressure Less than 130 Mm. of Mercury*

	Number of Cases
Blood pressure decreased	11
Blood pressure increased	41
Blood pressure unaffected	4
Blood pressure vasculating	2

Benzedrine Sulfate is the trade mark for the Smith, Kline & French Laboratories brand of benzyl methyl carbinamine sulfate. The manufacturers supplied the benzedrine sulfate for this study.

either in frequency or in duration. However, in no cases were they completely relieved. There was a very marked increase in the strength of the grip in fifty-three of the patients, in some to the extent of four or five fold.

There was a marked improvement in the ability to write and to draw on the part of forty-eight of the sixty-three patients who were able to write before treatment, and of the eleven who were not able to copy even the square on the first trial there were three who were able to copy several of the figures while taking the drug.

This improvement in writing and drawing is probably due to a general improvement in the extrapyramidal complex of symptoms and is a more accurate index of

the degree of tremor, rigidity and loss of habit movements than the usual methods of estimating them.

Tremor was noted in sixty-six cases and rigidity in seventy-two. Tremor was reduced in nineteen cases, unaffected in forty and augmented in seven. Rigidity was decreased in twenty cases, unaffected in forty-six and increased in six. The ability to perform serial movements was increased in twenty-four of the cases, unaltered in forty and diminished in ten. As we have already pointed out, the writing test probably gives a more accurate index of these abilities than the mere clinical observation of the examiner.

The effect of benzedrine sulfate on the blood pressure in this series gave us some interesting data. The blood pressures were increased in forty-four, decreased in twenty-one, unaffected in seven and variably affected in two cases.

In the sixteen cases showing systolic blood pressures of over 130 mm. of mercury, the pressures were decreased in ten, unaltered in three and increased in three (table 1).

In the fifty-eight cases showing systolic blood pressures of less than 130 mm. of mercury, the pressures were decreased in eleven, unaffected in four, increased in forty-one and of a vasculating type in two (table 2).

Benzedrine sulfate has vasopressor potentialities. In the majority of our patients with low blood pressure the drug increased the tension from a moderate to a marked degree, whereas in the majority of our patients under high tension the drug decreased the blood pressure below the previously recorded level. The latter effect of the drug, which is a vasopressor, seems paradoxical.

The synergic effect of benzedrine with the atropine group was nicely brought out by the fact that 82 per cent of the patients receiving constant doses of these drugs showed improvement while only 64 per cent of the patients receiving benzedrine alone presented sufficient objective evidence of benefit to be classed as improved. The synergic effect of benzedrine with the atropine group has been pointed out by Myerson, Loman and Dameshek.²

The untoward effects of benzedrine sulfate on our patients as judged by the results of large doses are insignificant. Three patients complained of excessive sweating. One very restless patient with parkinsonism complained that it increased her restlessness to an almost unbearable degree. It produced insomnia only in those who failed to follow instructions and took the drug late in the afternoon.

COMMENT

While the results here reported are not as favorable as those coming from other hospitals, we feel that the discrepancy is due to the severity of the conditions dealt with rather than to differences in methods of observation. Practically every case in our series is of long standing and fairly far advanced. All but one of our patients are too handicapped to be self supporting, and thirty-eight are confined to the wards. We therefore feel that an improvement in 71.6 per cent of our patients indicates the usefulness of benzedrine sulfate in the treatment of this disease, and while it may not produce the striking relief of symptoms that is seen with the atropine group, it has this advantage: that a constant dose seems to be adequate and the patient does not become a slave to it, requiring larger and larger doses,

as is the case with stramonium and scopolamine, nor has it the distressing side effects frequently seen with the belladonna group.

CONCLUSIONS

In the postencephalitic Parkinson syndrome, benzedrine sulfate, combined with the belladonna group of drugs or alone, is a very useful medication.

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FRACTURE OF THE ATLAS IN AUTOMOBILE ACCIDENTS

THE VALUE OF X-RAY VIEWS FOR ITS DIAGNOSIS

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THE JOURNAL has frequently discussed the causes and effects of automobile accidents and has published instructive papers on the typical injuries happening to automobile riders, such as crushing of the facial bones with loss of front teeth, and cuts. The present report draws attention to fractures of the atlas caused by automobile accidents. They are less conspicuous lesions than the ones just mentioned.¹ Still, proper diagnosis and treatment would prevent unpleasant sequelae and are necessary for medicolegal reasons.

The conception of "broken neck" is frequently associated in the minds of laymen and physicians with cord injuries and a high mortality. This is true for some of the occupational accidents, as in miners. Fracture of the atlas, however, is far less hazardous, as will be explained. During the last century, fractures of the first cervical vertebra were hardly discovered without autopsy. Since then the x-rays have made it possible to diagnose this injury during life.

Only ninety-three cases of fractures of the atlas were found in the entire literature. Six such injuries occurring in the last few years were among the material available to me. This indicates that such fractures are not so rare as was formerly assumed.

The first cervical vertebra is well guarded by the skull, mandible and surrounding soft parts. It is formed by the two substantial lateral masses connected by the anterior and the somewhat thinner posterior arch. Instead of a spinous process there is only a posterior tubercle. The transverse processes extend far laterally and are traversed by the vertebral artery and vein. The artery turns medially before entering the foramen magnum and follows the upper surface of the posterior arch in a groove. The atlas has no body proper; instead, the odontoid process of the axis (epistropheus) extends into the anterior part of the atlas ring. The position of this pivot for the rotation of the skull and the atlas is secured by the strong transverse ligament. The wide vertebral foramen offers ample space for the medulla.

The atlas is extremely seldom injured by direct violence except by projectiles. Its singular shape and function prevent the application of our usual conception of the pathology of spinal fractures. X-ray examination and autopsy reveal a few very typical sites for fractures of the atlas: the bilateral and unilateral ones in the posterior arch, where it is weakened by the groove for the artery, and those in the anterior arch. Breaks of the transverse processes and in the lateral masses are the exception.

1. Dyas, F. G., and Goren, M. L.: Bumper and Fender Fractures. *Surge., Gynec. & Obst.* 65: 690-694 (Nov.) 1937. Strath, C. L.: Automobile Injuries. *J. A. M. A.* 109: 940-945 (Sept. 18) 1937.

Former reports from rural districts and gymnasiums explain very well the mechanism in fractures of the atlas. Either the injured person has fallen headlong onto soft ground or onto a quilt or similar material, or an object such as a sack of starch has dropped on his head. The well defined posture of the gymnasts and in many more instances the lacerations of the scalp give some clue to the forces acting on the body. A violent blow to the head with a hard implement would probably cause a skull fracture. A more gradual pressure on the relaxed neck would result in the common fracture of the fifth and

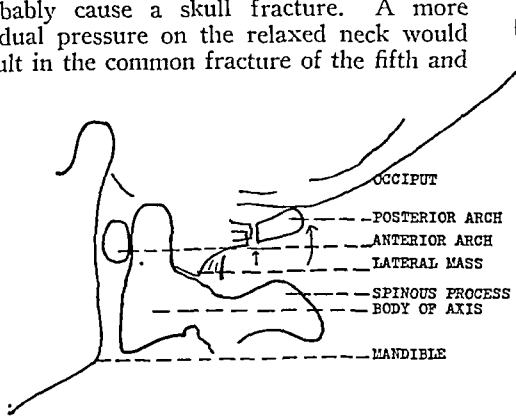


Fig. 1.—Half-schematic diagram of a bilateral fracture of the posterior arch of the atlas. The short arrow points to the fracture gap; the longer arrow indicates the dislocation.

sixth cervical vertebrae, where the curve of the spine turns from a lordosis into the normal dorsal kyphosis.

However, pressure brought on the neck by more resilient material while the neck is fixed in the straight position is met by counter pressure from the remaining spine. Squeezed between the forces, the wedgelike lateral masses are displaced laterally, bursting the atlas ring at its weak points in the posterior or anterior arch. In forced backward flexion of the skull with the cervical spine, the spinous process of the axis and the occiput may act on the posterior circumference of the atlas as on a lever. A case of ours seemed to indicate that the atlas was pushed upward beyond the limits of its flexibility, suffering a bilateral fracture of the posterior arch. Occasionally pressure of the odontoid process against the anterior arch may lead to a fracture.

Automobile riders, bumping their heads against the windshield or the roof in head-on collisions and in overturning cars, suffer all kinds of spinal injuries, depending on the direction of the force and the position of the neck. Fractures of the odontoid and of the bodies of the fourth and sixth cervical vertebrae and forward dislocations of the third, fourth and fifth cervical vertebrae are reported.² Fractures of the odontoid probably are the result of a push in a more or less sagittal and horizontal direction; incomplete bony union at the base of the odontoid, with a cartilage island remaining in 23.5 per cent of all patients between 30 and 50, may contribute to its occurrence. The reported fractures and forward dislocations of the lower cervical vertebrae probably are the results of such forces as flexion and the momentum of the skull in a sudden stop of the car.

There is no apparent reason why the mechanism of fractures of the atlas in automobile accidents should differ from those in gymnasiums. Vertical pressure

on the skull, with the cervical spine fixed in a straight position, makes the atlas suffer the brunt and yield, when the lateral masses are squeezed between the occipital condyles and the axis.

The chief complaints of patients with atlas fracture are pains in the upper part of the neck, mainly in the nuchal groove, with rigidity and impairment of nodding more than rotation. The painful pull on the fragments by the various muscles participating in the movements of the head and neck quite frequently causes patients to hold their heads with both hands. In fractures of the anterior arch the ensuing hemorrhage into the prevertebral tissues may cause pain and difficulty in swallowing, even in the absence of injuries to the cord. In these cases palpation of the posterior pharyngeal wall is painful although not as informative as, for instance, in dislocations of the atlas. All in all, the clinical signs focus our attention on the upper cervical region. They will not, however, suffice to determine the exact nature of the injury. For a conclusive diagnosis one has to resort to the x-ray examination.

Typical roentgenograms should be taken first. If they do not answer the purpose, films in special or atypical directions should be added. The lateral view of the sitting patient at a distance of 6 feet gives good information about the condition of the cervical vertebrae and their relation to one another. Otherwise the patient can be placed on the table in the lateral position, the cassette being supported by a block with the x-ray tube above. The prone position with turning of the head laterally should be avoided, because the resulting rotation of the upper cervical vertebrae sometimes induces a wrong diagnosis. Unconscious or severely injured patients are examined in the supine position with the cassette placed to the side of the neck, the x-ray tube pointing horizontally. This saves handling of the fractured part. The anteroposterior view is taken through the open mouth, when possible.

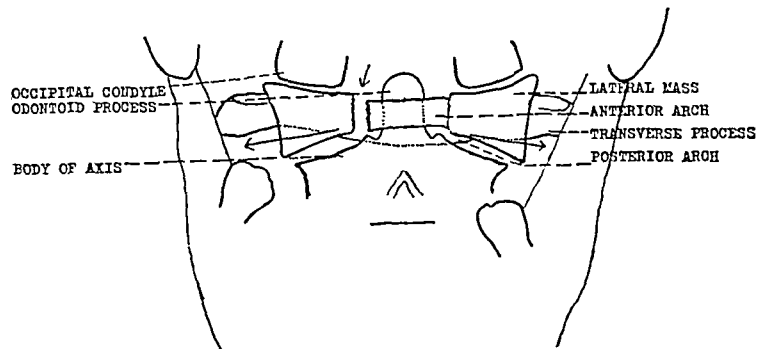


Fig. 2.—Diagram of a fracture on the right side of the anterior arch of the atlas. Arrows as in figure 1.

Most of the fracture gaps of the posterior arch are situated close to the lateral masses and are recognized without difficulty in the lateral view. Congenital gap formations, seen in more than 3 per cent of all cases, in contradistinction are smoothly outlined and usually close to the midline.³ In bilateral separation the posterior arch frequently is angulated upward by traction of the rectus capitis posterior minor muscles (fig. 1).

Breaks of the anterior arch often present diagnostic difficulties. In the anteroposterior view this

2. Roberts, S. M.: Fractures and Dislocations of the Cervical Spine, *J. Bone & Joint Surg.* 19: 199-214 (Jan.), 477-495 (April) 1937.

3. Plaut, H. F.: Fracture of the Atlas or Developmental Abnormality? *Radiology* 29: 227-231 (Aug.) 1937.

structure is rather distant from the film, in addition overlapping the odontoid and the posterior arch. Spread of both lateral masses of the atlas laterally beyond the corresponding articular facets of the axis truly proves a separation of the anterior arch (fig. 2). If one lateral mass is in normal articulation with the body of the axis and the other one displaced laterally, this would also indicate a fracture of the anterior arch. In a dislocation of the atlas without fracture the lateral masses would shift for the same distance and in the same direction; the relation of the lateral masses to the odontoid process aids in determining the nature of the lesion.

A good survey of the anterior arch of the atlas is also given by an exposure in nearly axial direction similar to that used for examination of the maxillary sinuses. The central ray should then be directed over the vertex, projecting the atlas in the space between the mandible and the posterior circumference of the occiput. This or axial roentgenograms should not be taken before a fracture of the odontoid or a rupture of the transverse ligament is excluded.

For special demonstration of the anterior arch I have used a new technic: the postero-anterior view of the atlas region on enoral film. A tooth film is pressed against the anesthetized posterior pharyngeal wall (or, if this is impracticable, is placed in vertical position between the molars). The close contact of the film with the anterior arch gives a sharp image of this part and permits studying its details.

The roentgenography of the upper cervical region presents some difficulties which are apt to cause mistakes in the interpretation. No attempt will be made to discuss the differential diagnosis; the interested reader is referred to the more detailed paper.⁴

Associated injuries are skull fractures, dislocations of the atlas and injuries to the remaining cervical vertebrae, especially fractures of the odontoid, each presenting its clinical and radiologic signs. Occipital neuralgias occur frequently and are caused by the fragments of the posterior arch pinching the ganglions.

Injuries to the cord are very rare compared to their incidence in other cervical fractures. The wide aperture of the vertebral foramen of the atlas and the mechanism of its fracture, which favors a lateral displacement of the fragments away from the cord, are responsible. For this reason the mortality in the cases reported since 1900 is as low as 13.8 per cent, in spite of the neighborhood of the vital centers in the medulla oblongata and of the vertebral arteries.

Treatment consists in immobilization to relieve the pain and permit healing. Plaster cast, traction, Thomas collar and, rarely, operation are used. Fractures of the atlas are noted for their lack of callus formation and long lasting pseudarthroses. The majority of the patients regain their full occupational capacity.

19 West Seventh Street.

4. Plaut, H. F.: *Am. J. Roentgenol.*, to be published.

The Ideal Anesthetic.—Experimental therapeutics will in time doubtless give us the ideal anesthetic, a single injection of which will induce a prolonged insensitive sleep, perchance of long enough duration for primary wound healing to occur. Then will the surgeon's weight of responsibility, whether in laboratory or clinic, be greatly lightened, for undoubtedly today inhalation anesthesia itself gives him his chief sense of anxiety, and his patients, whether animal or man, their chief discomforts. Cushing, Harvey: *Consecratio Medici and Other Papers*, Boston, Little, Brown & Co., 1928.

FATALITY RATES IN CEREBROSPINAL MENINGITIS

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It has been difficult to ascertain the normal fatality rate in epidemic cerebrospinal meningitis before the institution of specific therapy. It is felt that after serum treatment came into use the estimation of fatality rates entered into the controversial field.

Flexner¹ gave the fatality rate in the period from 1904 to 1905 and from 1911 to 1913 as 73 per cent in New York, 69 per cent in Boston, and 76 per cent in Hartford, and listed other cities in this country and Europe with similar or even higher fatality rates. Earlier estimations attempted in the preserum period are as follows:

In addition to the statement of von Ziemssen, quoted by Flexner,¹ that the mortality rate ranged from 35 to 70 per cent, with an average of 40 per cent, Eichhorst, who wrote the chapter on epidemic cerebrospinal meningitis published in Appleton's *Modern Clinical Medicine* in 1905, stated that the disease, as other infectious diseases, showed varying death rates in different epidemics but that in his opinion the fatality rate varied from 20 to 85 per cent.

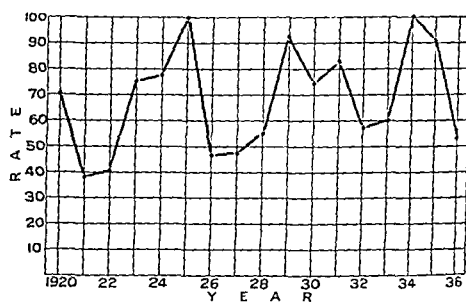


Chart 1.—Fatality rates at San Francisco.

In Osler's *Principles and Practice of Medicine*, published in 1904, is found the quotation from Hirsch to the effect that the mortality has ranged in various epidemics from 20 to 75 per cent.

Rosenau, in his *Preventive Medicine and Hygiene*, published in 1916, states that in New York for the years 1904 to 1905, the years of the great epidemic, there were 6,755 cases and 3,455 deaths, or a fatality rate slightly in excess of 51 per cent.

In all likelihood thirty years ago the true fatality rate from cerebrospinal meningitis had not been accurately determined, a condition which I believe prevails to a certain extent today. One fact seems to have been recognized by all clinical observers: the wide variability in the fatality rates in different epidemics, a condition which—as will be seen—also exists at the present time.

In order to obtain light on this subject, letters were addressed to a number of the health departments of some of the larger municipalities. It was believed that information obtained from these sources would be valuable for a number of reasons: In the first place it would be compiled without prejudice and in a spirit which disregarded any controversial aspects in the matter; also it would relate to large numbers of people living in close contact with highly developed municipal laboratories where early and accurate diagnosis could

From the Medical Section of the Employees Hospital.
1. Flexner, Simon: *The Results of the Serum Treatment in 1,393 Cases of Epidemic Meningitis*, *J. Exper. Med.* 17: 553-576, 1913.

be made and the proper treatment instituted. I believe that there are more cases diagnosed in the cities than in the rural districts, certainly in the earlier years with which this contribution concerns itself.

Through the courtesy of the Office of the Surgeon General I was able to obtain fatality statistics regarding his branch of the military service.

The experience of the personnel of the United States Army, years 1920 to 1936 inclusive, show 359 cases and 125 deaths, or a fatality rate of 34.8 per cent.

The personnel of the United States Army consists of young adults of unusually fine physique, in excellent health in every way, in the prime of life physically, living in the best possible nutritional state with constant skillful medical supervision and daily medical inspection.

When it is remembered that the highest rates in this disease occur at the two extremes of life, among children and among old persons, and when it is remembered also how the general health conditions of the population at large fall far behind those represented in the army, the fatality rate of 34.8 per cent, I believe, is comparable in every way to the fatality rate of 51.2 per cent in the communities under discussion.

Meningitis Data, 1920-1936 Inclusive

City	Population	Cases	Deaths	Fatality Rate
San Francisco.....	634,394	459	311	68%
Milwaukee.....	578,249	775	491	63
Los Angeles.....	1,238,048	784	496	63
Toledo, Ohio.....	290,718	172	105	61
Boston.....	781,188	773	458	59
Philadelphia.....	1,950,961	1,075	619	58
Portland, Ore.....	301,815	224	128	57
New Orleans.....	458,762	455	253	56
Cincinnati.....	451,160	688	379	55
Indianapolis.....	364,161	755	423	56
Pittsburgh.....	669,817	723	395	55
New York.....	6,930,446	5,984	3,118	52
Dallas, Texas.....	260,475	114	56	49
Baltimore.....	804,874	1,304	627	48
Chicago.....	3,398,758	4,028	1,925	48
Houston, Texas.....	292,352	169	80	47
St. Louis.....	821,960	1,272	495	47
Detroit.....	1,568,662	2,232	1,045	47
Cleveland.....	900,429	730	328	45
Buffalo.....	573,076	366	157	43
Louisville, Ky.....	307,745	210	90	43
Seattle.....	365,583	393	150	38
Totals.....	23,943,633	23,685	12,129	51.2

The figures referring to the fatality rates in the Chicago area were taken from the article by Dr. Archibald L. Hoyne entitled *Meningitis*, published in the *Journal of the Iowa State Medical Society* 26: 549 (Oct.) 1936.

It is evident from our knowledge of the disease at the present time that a certain number of cases will always escape detection. These cases, I believe, will not only be of the meningococcic septicemia type but also will include some of the milder cases wherein the meninges have been invaded. I have reason to believe, from what I have seen in a recent epidemic, that varying degrees of meningococcic infection take place and that by no means all of them go on to the grave type of the disorder which we have been accustomed to recognize as its only form.

Herrick² estimated that 4 per cent of the cases at Camp Jackson escaped recognition. When one considers that these cases occurred in a body of men under close supervision and at a time when an epidemic was in progress, it is only fair to presume, I think, that the percentage of unrecognized cases in the civilian population, where there was no such supervision and when an epidemic was not in progress, would be considerably higher.

2. Herrick, W. W.: Early Diagnosis and Intravenous Serum Treatment of Epidemic Cerebrospinal Meningitis, *J. A. M. A.* 71: 612-616 (Aug. 23) 1918.

Flexner¹ was aware of this type, to which he referred as "another variety hitherto little remarked, the frequency of which is not known, namely the ambulant, little ill at any time, and recovery is the rule."

Support of this idea is given also by the contribution of Dock.³ He was able to collect sixty-eight cases of meningococcic septicemia, forty-one of which occurred

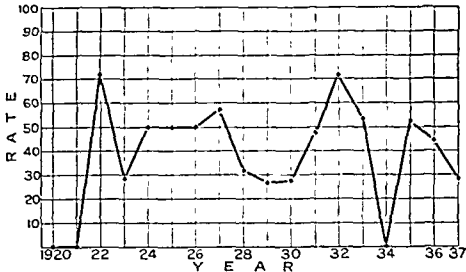


Chart 2.—Fatality rates at Seattle.

among soldiers. Similar implications, I believe, are reasonable from this contribution.

With these considerations in view I have felt that any standard by which one attempts to estimate fatality rates must be regarded as possessing some degree of elasticity, constructed with frank recognition of the fact that a certain proportion of the cases will always escape notice.

SUMMARY

1. The experience of some twenty million urban dwellers with the disease epidemic cerebrospinal meningitis over a period of sixteen years has been recorded.
2. The fatality rate in different municipalities has varied between 67.7 and 38.1 per cent. The average fatality rate has been 51.2 per cent.
3. I believe that this represents an accurate description of the experience of these communities with this disease for the time specified.
4. It is difficult to estimate the fatality rate of this disease before the use of serum began. The fatality rates recorded by Flexner¹ apparently refer to one or more epidemic outbreaks of the disease.
5. On one point all observers have agreed: the death rate varies greatly from year to year.

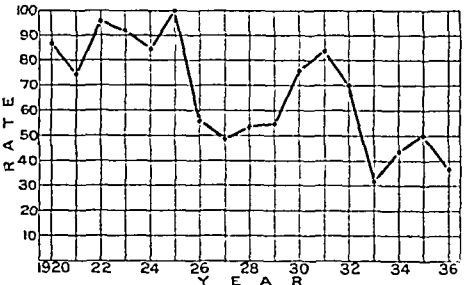


Chart 3.—Fatality rates at Milwaukee.

6. Several clinicians of wide experience have expressed the opinion that the fatality rate in the pre-serum era varied between 20 and 80 per cent. Rosenau listed six thousand odd cases occurring in New York State during the years 1904 and 1905 with a fatality rate of 51 plus per cent. The fatality rate defined in this contribution about equals that recorded by Rosenau.

3. Dock, William: Intermittent Fever of Seven Months' Duration Due to Meningococcemia, *J. A. M. A.* 83: 31 (July 5) 1924.

7. It is my opinion from the available evidence that the treatment of epidemic cerebrospinal meningitis as used in the urban population described over the time period to which I have had reference has reduced the fatality rate of this disease little if at all.

8. While there is no factual evidence to support the idea that such treatments in such localities over such time periods have increased the fatality rate of this disease, nevertheless the failure of the fatality rate to decline, as most similar rates in infectious diseases have declined in that period, suggests that the type of treatment referred to may have harmful rather than beneficial effects. This view of the question is of sufficient import to invoke earnest and careful study.

VITAMIN C IN THE BLOOD, SPINAL FLUID AND URINE

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AND

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Vitamin C is found in all body tissues and fluids in varying amounts and is believed to have an important role in all cellular oxidations. In an effort to find a convenient index of the state of vitamin C nutrition, investigators have centered their attention chiefly on the amounts in the urine, blood and spinal fluid. The interpretation of the varying relationships between these and the question of which is the best representative of tissue saturation are still unsettled matters. The method in most general use has been that introduced by Harris and Ray.¹ They determined the proportion of a test dose excreted in the urine within a certain time and found that a large part of it was recovered from well saturated subjects and vice versa. Wright,² Ralli³ and others in this country, using modifications of their technic have preferred this test to determinations of the amount in the blood. Farmer and Abt.⁴ and van Eekelen,⁵ however, have considered the blood level more informative, and Plaut and Bülow⁶ said that determinations on the spinal fluid may supply the best index of vitamin C nutrition.

The present study was undertaken in the hope of correlating these three indexes for a group of patients in differing states of cevitic acid saturation. The five hour urinary excretion test of Wright² was done on 133 patients in the wards of Bellevue Hospital. Just before the test samples of blood and spinal fluid were withdrawn for vitamin C determination. At the same time, capillary resistance tests by both the suction cup and the tourniquet method were made on the majority of these patients; they will be reported in a separate paper.

From the following departments of the Bellevue Hospital: the Department of Pathology, the Laboratory of Experimental Neurology, the Neurologic Division (Dr. Foster Kennedy, director), the First Medical Division (Dr. I. Ogden Woodruff, director), the Psychiatric Division (Dr. Karl M. Bowman, director) and the Second Medical Division (Dr. A. Liggett Lincoln, director).

1. Harris, L. J., and Ray, S. N.: *Lancet* 1:71 (Jan. 12) 1935.
2. Wright, I. S.; Lillienfeld, Alfred, and MacLenathen, Elizabeth: *Determination of Vitamin C Saturation*, *Arch. Int. Med.* 60:264 (Aug.) 1937.
3. Ralli, Elaine P.; Friedman, G. J., and Kaslow, Murray: *Proc. Soc. Exper. Biol. & Med.* 36:52 (Feb.) 1937.
4. Farmer, C. J., and Abt, A. F.: *Proc. Soc. Exper. Biol. & Med.* 32:1625 (June) 1935.
5. Van Eekelen, Marie: *Biochem. J.* 30:2291 (Dec.) 1936.
6. Plaut, F., and Bülow, M.: *Ztschr. f. d. ges. Neurol. u. Psychiat.* 152:84 (Jan.) 1935; *Ztschr. f. physiol. Chem.* 236:241, 1935.

METHODS AND MATERIALS

The patients tested numbered 133. They were taken in about equal numbers from the general medical and the neuropsychiatric wards. With only two exceptions all patients were afebrile at the time of testing, although a few had recently recovered from febrile illnesses. There was a slightly increased incidence of definite nutritional diseases (six cases of frank scurvy, two of pellagra, three of "malnutrition," eleven of peripheral neuritis of avitaminotic origin and eight of alcoholism without neuritis), because patients with such diseases were referred to us for vitamin studies. Otherwise no attempt was made to select patients on the basis of either disease entities or previous dietary history. It should be noted, however, that the patients at Bellevue Hospital are in general drawn from the lowest income groups and that the majority subsist on diets very low in all vitamins. In addition the routine ward diets are rather low in vitamin C.

On all patients reported in this study a lumbar puncture was done, blood was drawn for vitamin C assay and then 1 Gm. of crystalline cevitic acid,⁷ dissolved in 5 cc. or 10 cc. of sterile distilled water, was injected intravenously. The urine for the next five hours was collected in brown glass bottles and kept acid with sulfuric acid to p_{H_3} . The urine was then titrated (after dilution with distilled water) against Tillman's 2:6 dichlorophenolindophenol.¹ Wright has shown that 80 per cent of the total twenty-four hour excretion following such a test is excreted in the first five hours. He considers as normal any excretion greater than 400 mg. We have accepted this definition of normal in our work.

The blood was oxalated and taken immediately to the laboratory. The centrifugated plasma was titrated by the method of Farmer and Abt.⁴ We considered 0.7 mg. per hundred cubic centimeters as the lowest limit of normal for cevitic acid in blood plasma. This is the figure given for the method by Farmer and Abt, Wright and Greenberg, Rinehart and Phatak.⁸ The levels determined by us for fourteen healthy medical students and interns with adequate diets ranged from 0.74 to 1.38 mg.

The spinal fluid content of vitamin C was also determined by the method of Farmer and Abt. Plaut and Bülow reported losses of as high as 90 per cent of the reducing power of cevitic acid in the spinal fluid after it had stood one and one-half hours at room temperature but stated that it retains three fourths of its reducing power if acidified with 0.1 cc. of trichloroacetic acid to each cubic centimeter of spinal fluid. In our own determinations we found an average loss of reducing power against Tillman's reagent of only 10 per cent in one hour without acidification and only a negligible loss if the spinal fluid was acidified immediately.

Plaut and Bülow have set as normal standards for spinal fluid 1.77 mg. per hundred cubic centimeters for the age group from 20 to 35, 1.97 mg. for the age group from 36 to 59 and 0.51 mg. for the age group from 61 to 83.

They did not state, however, what their criteria for normal are. We attempted to set up tentative criteria by considering as normal those patients who had both a blood level of 0.7 mg. or over and a five hour urinary excretion of 400 mg. or more after a 1 Gm. test dose. Twenty-six patients fulfilled these criteria. Their

7. Cebione (Merck), supplied by Merck & Co., Rahway, N. J.
8. Greenberg, L. D.; Rinehart, J. F., and Phatak, N. M.: *Proc. Soc. Exper. Biol. & Med.* 35:135 (Oct.) 1936.

values for vitamin C in the spinal fluid ranged from 1.82 to 4.18 mg. We tentatively accepted as normal any spinal fluid containing 1.82 mg. or more of cevitamic acid per hundred cubic centimeters. In the present series we did not note any definite age correlation for our spinal fluid values.

RESULTS

The results of tests on 133 patients are shown graphically in charts 1 and 2. They may be summarized by dividing the cases into three groups on the basis of determinations of the amount of vitamin C in the blood, as follows:

I. Normal group (0.7 mg. or over per hundred cubic centimeters of blood); thirty patients.

A. The vitamin C content of the spinal fluid was normal (1.82 mg. or over) in twenty-nine (97 per cent) of these patients, and the remaining patient had a content of 1.79 mg. The average spinal fluid content for the whole group was 3.05 mg. per hundred cubic centimeters.

B. The five hour urinary excretion test was normal (400 mg. or over) for twenty-six (87 per cent) of the thirty patients. The average urinary excretion for the whole group was 484 mg.

II. Intermediate subnormal group (from 0.4 to 0.69 mg. per hundred cubic centimeters of blood); thirty-five patients.

A. The vitamin C content of the spinal fluid was normal in seventeen (49 per cent) and subnormal in eighteen (51 per cent). The average spinal fluid content for the whole group was 1.82 mg. per hundred cubic centimeters.

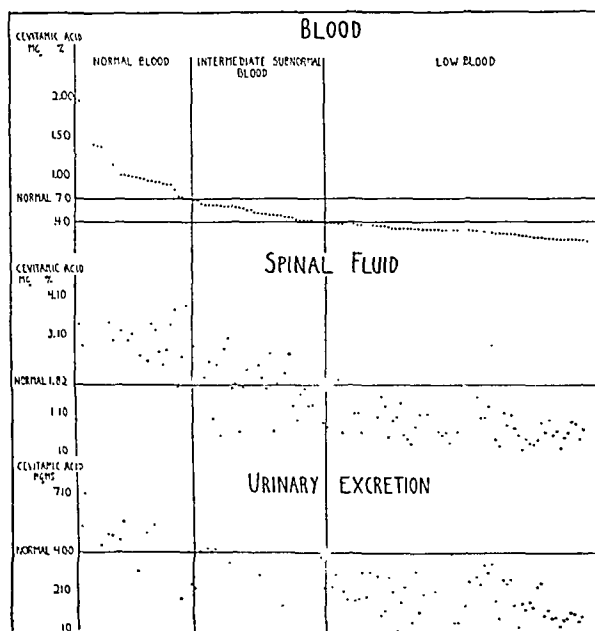


Chart 1.—Blood spinal fluid and urinary excretion values for vitamin C in 133 cases graphed in descending order of blood values. Dots on same ordinate represent determinations on same patient.

B. The five hour urinary excretion test was normal for eleven (31 per cent) and subnormal for twenty-four (69 per cent). The average urinary excretion for the whole group was 289 mg.

III. Subnormal group (less than 0.4 mg. per hundred cubic centimeters of blood); sixty-eight patients.

A. The vitamin C content of the spinal fluid was subnormal in fifty-nine (87 per cent) of the sixty-

eight patients. The average content for the whole group was 1.01 mg. per hundred cubic centimeters.

B. The five hour urinary excretion test was subnormal for sixty-seven (99 per cent) of the sixty-eight patients. The average urinary excretion for the whole group was 116 mg.

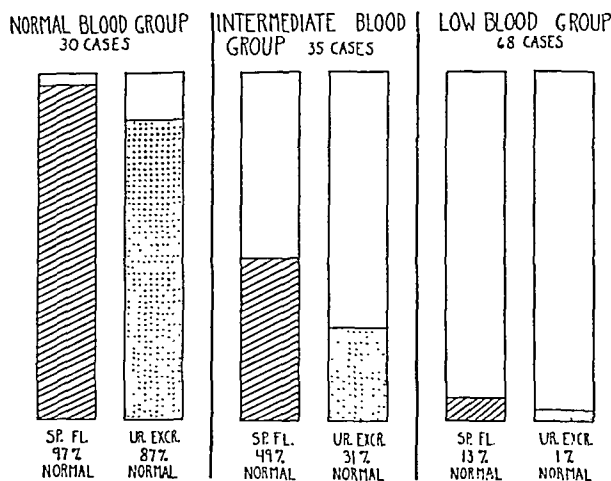


Chart 2.—Percentage correlation by blood groups.

Analyzing the data on the 133 cases, taking the five hour urinary excretion as one's point of reference, one finds that:

A. Thirty-eight patients had a normal five hour urinary excretion test. The vitamin C content of the blood was normal (above 0.7 mg. per hundred cubic centimeters) in twenty-six (68 per cent) of these thirty-eight patients; eleven of the twelve remaining patients had intermediate subnormal levels (from 0.4 to 0.69 mg. per hundred cubic centimeters), and only one patient had a level below 0.4 mg. The vitamin C content of the spinal fluid was normal in thirty-five (92 per cent) of the thirty-eight patients with a normal urinary excretion test.

B. Ninety-five patients had a subnormal five hour urinary excretion test (less than 400 mg.). The vitamin C content of the blood was subnormal in ninety-one (96 per cent) of these and the content of the spinal fluid was subnormal in seventy-seven (81 per cent).

Analyzing the data on the 133 cases, taking the vitamin C content of the spinal fluid as one's point of reference, one finds that:

A. Fifty-three patients had normal values for the spinal fluid (above 1.82 mg. per hundred cubic centimeters). The values for the blood were normal for twenty-nine (55 per cent) of these, intermediate subnormal (from 0.4 to 0.69 mg. per hundred cubic centimeters) for seventeen (32 per cent) and low (below 0.4 mg.) for seven (13 per cent). The urinary excretion test was normal for thirty-five (66 per cent).

B. Eighty patients had subnormal values for the spinal fluid (below 1.82 mg. per hundred cubic centimeters). The values for the blood were subnormal (below 0.7 mg. per hundred cubic centimeters) for seventy-nine (99 per cent) of these. The urinary excretion test was subnormal for seventy-seven (96 per cent).

We believe that our results indicate that a normal vitamin C content of the blood (i. e., above 0.7 mg. per hundred cubic centimeters) and a very low content (below 0.4 mg. per hundred cubic centimeters) are

almost invariably associated with corresponding normal and subnormal values for both the spinal fluid and the five hour urinary excretion test and that therefore the blood alone in these ranges furnishes an adequate and accurate index of the vitamin C nutrition. In the intermediate subnormal range of vitamin C content of the blood (from 0.4 to 0.69 mg.) no such close correlation exists, and in this range all available means of study, including clinical evaluation of the patient, should be used.

If the excretion of the urine is being studied, our results show that a subnormal five hour excretion test is almost invariably associated with subnormal values for the blood and the spinal fluid. A normal excretion test is almost invariably associated with a normal value for the spinal fluid and a value for the blood above 0.4 mg. per hundred cubic centimeters.

If the vitamin C content of the spinal fluid is determined, our results show that a subnormal value (i. e., below 1.82 mg. per hundred cubic centimeters) is almost invariably associated with a subnormal value for the blood and a subnormal urinary excretion test. A normal value for the spinal fluid may be associated with either normal or subnormal values for the blood and the urine.

COMMENT

The vitamin C values for blood, spinal fluid and urine given in this paper are not absolute values. The methods of assay of vitamin C are constantly changing, and the accepted values will change according to the method used. At the time this study was undertaken the method of Farmer and Abt appeared to be the most accurate available. This method measures only the reduced cevitamic acid. The method of van Eekelen, in which it is assumed that vitamin C exists in blood in both the reduced and the reversibly oxidized form (dehydro-ascorbic acid), uses reduction of the supposedly present dehydro-ascorbic acid with hydro-sulfuric acid. This supposed added reduction (with consequently higher values for vitamin C) has been criticized by Kellie and Silva⁹ as an artefact.

Recently Pijoan and Klemperer¹⁰ have published a study showing that in the method of Farmer and Abt a loss of vitamin C occurs through oxidation, both before and during titration. This loss, they stated, can be prevented by the addition of potassium cyanide to the blood as soon as it is drawn from the vein. It should be noted, however, that their normal range of values for vitamin C in the blood (from 0.65 to 2.0 mg. per hundred cubic centimeters) agrees with our own very closely. In addition, our determinations on the blood were all done less than one-half hour after the samples were obtained. Taylor, Chase and Faulkner,¹¹ using a method of precipitating the plasma with sodium tungstate and sulfuric acid (similar to the method of Farmer and Abt), found that added yields of as much as 100 per cent are obtained by redissolving the precipitated plasma in excess sodium tungstate and reprecipitating with sulfuric acid, adding the washings at each reprecipitation. Iodometric¹² and methylene blue titration¹³ and spectroscopic methods¹⁴ for estimation of vitamin C also have been described by other investigators.

9. Kellie, A. E., and Silva, S. S.: *Biochem. J.* **30**: 361 (March) 1936.

10. Pijoan, M., and Klemperer, F.: *J. Clin. Investigation* **16**: 443 (May) 1937.

11. Taylor, F. H. L.; Chase, Dorrance, and Faulkner, J. M.: *Biochem. J.* **30**: 1119 (July) 1936.

12. Drigalski, Wolf: *Ztschr. f. Vitaminforsch.* **4**: 356 (Oct.) 1935.

13. Lund, Helge, and Lieck, Herbert: *Klin. Wchnschr.* **16**: 555 (April 17) 1937.

14. Plaut, F.; Bülow, M., and Pruckner, F.: *Ztschr. f. physiol. Chem.* **234**: 141, 1935.

We have had no experience with any of these methods, and, as before stated, we make no claim for the absolute accuracy of our results. Furthermore, it should be remembered that our results apply only to relatively stable patients. We do not know if they are applicable to patients who have recently received unaccustomed, large doses of vitamin C or who have recently been subjected to sudden deprivation of the vitamin. With these qualifications we do feel that our values for blood, spinal fluid and urinary excretion are accurate in relation to each other and that our results demonstrate a close parallelism between these values in the ranges stated.

Since this parallelism exists, we believe that values for the blood, if they fall within the ranges of normality or of marked hypovitaminosis (i. e., below 0.4 or above 0.7 mg. per hundred cubic centimeters) provide a sufficient and accurate index of the vitamin C nutrition. The advantages of any test that utilizes the blood instead of the spinal fluid or the results of the laborious five hour urinary excretion test are obvious. However, in the intermediate range of subnormal values for the blood (from 0.4 to 0.69 mg.) all available methods of study are advisable.

Six patients in our series had clinical scurvy and all presented extensive purpura (with normal platelets, bleeding time and clotting time). Four of the six had typical hyperplastic granulations on the gums, while the remaining two showed only marked gingivitis. The vitamin C content of the blood ranged from 0.22 to 0.3 mg. per hundred cubic centimeters, the content of the spinal fluid from 0.25 to 0.42 mg. per hundred cubic centimeters and the five hour urinary excretion from 53 to 149 mg. The determinations for six of our patients who presented none of the clinical features of scurvy were all within the range for scurvy. The diagnosis for these six were Laënnec's cirrhosis (two cases), carcinoma of the stomach, essential hypertension, psychoneurosis and pernicious anemia. In addition thirty-seven patients had values for the blood below 0.31 mg. per hundred cubic centimeters, sixteen had a urinary excretion below 149 mg., six had values for the spinal fluid below 0.42 mg. per hundred cubic centimeters and all of them were without purpura or typical scorbutic gums. Perhaps it is necessary that such low levels exist for a considerable period before the clinical manifestations of scurvy develop.

Scurvy is a clinical entity. Its diagnosis may be confirmed by vitamin assay, but no specific level of vitamin C at any given moment in blood, spinal fluid or urinary excretion is necessarily associated with the clinical manifestations of scurvy.

SUMMARY AND CONCLUSIONS

The vitamin C content of the blood, of the spinal fluid and of the five hour urinary excretion after a 1 Gm. intravenous test dose of cevitamic acid were determined for 133 patients.

1. A blood content of vitamin C above 0.7 mg. per hundred cubic centimeters (by the method of Farmer and Abt) is almost invariably associated with a normal spinal fluid content and a normal urinary excretion test for vitamin C. A blood content of vitamin C below 0.4 mg. per hundred cubic centimeters is almost invariably associated with a subnormal spinal fluid content and a subnormal urinary excretion test. In these ranges the blood is an adequate and accurate index of the state of vitamin C nutrition.

2. In the intermediate subnormal range for blood (from 0.4 to 0.69 mg. per hundred cubic centimeters) all available tests should be used, including clinical evaluation of the patient.

3. Scurvy is a clinical entity, and its diagnosis cannot be made by vitamin C determinations alone.

CYSTIC HYGROMA OF THE NECK

BRUCE L. FLEMING, M.D.

PHILADELPHIA

A hygroma is a thin-walled cystic tumor containing lymph and lined with endothelium. It occurs most commonly in the side of the neck in the lower half. Occasionally it extends into the mediastinum. These tumors are usually made up of several cysts and are then described as lobulated. Capillary and cavernous types, however, occur in children. Hygromas also have been found in the axilla and groin, but these are rare. Hygromas of the neck appear most frequently during the first two years of life, but they may develop at any time. They grow rapidly.

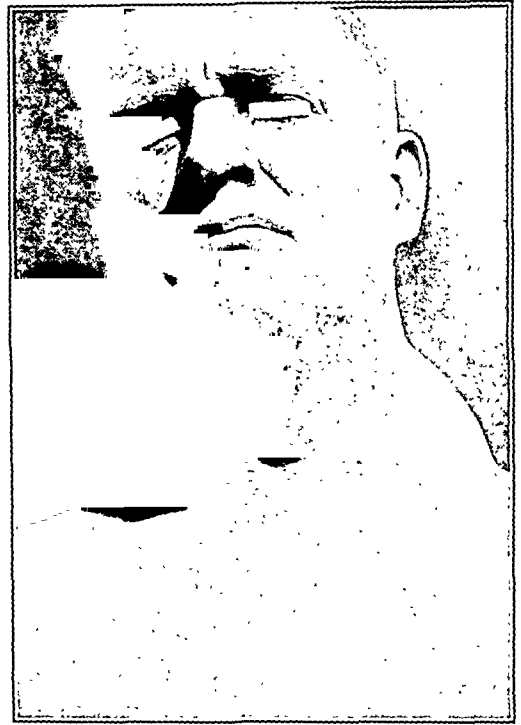
Dowd¹ collected reports of ninety-one cases in 1913. Only seven of these were in adults, whose ages ranged from 19 to 37 years. Vaughn² in 1934 reviewed all cases recorded in the literature since 1913. They numbered sixty-four cases. Only ten of these were in adults, whose ages ranged from 18 to 36 years. MacGuire³ in 1935 reported eight other cases. Two of these were in adults. Thus only nineteen cases in adults appear in 163 recorded in the literature. Two more such cases are reported herein.

It seems quite definitely established that hygromas grow from the lymph sacs known to appear in the neck in the embryologic development of the lymphatic system. The origin of these lymph sacs is still a matter of controversy. Sabin⁴ has found that the lymphatic system begins in the human embryo during the sixth week of development. "These first lymphatics are blunt buds which come from the internal jugular vein at the root of the neck. These buds grow together and form a large sac which is attached to the internal jugular vein and extends into the posterior triangle of the neck." McClure⁵ believes that these lymphatic sacs appear independent of the blood vascular system and become attached to the internal jugular veins later in development. He says "The general principle of the local genesis of intra-embryonic endothelium from mesenchyme may now be regarded as an established fact." McClure and Huntington believe that in certain cases some of these structures may never connect with the veins but give rise to hygromas. This is the generally accepted theory of their origin.

Cystic hygromas have very thin walls of fibrous tissue lined with endothelium, which is readily stained with silver nitrate so that the cellular arrangement may be seen. These lining cells differ from the endothelial cells which normally line lymphatic capillaries.⁶ The latter

are usually thinner. They do not differ structurally from the endothelial cells lining the main group of blood capillaries.

The function of the lining endothelium of lymph capillaries is essentially absorptive and that of the blood capillaries is both productive and absorptive. In hygromas the lining cells seem to resemble functionally the endothelium of blood capillaries, for in all probability they produce the lymph which fills the cysts. No other source has been determined. This lymph may be tinged with blood though it is usually straw colored. Rudimentary forms of lymph "gland" tissue containing both lymphatic capillary network and blood vascular tissue is sometimes found attached to hygroma colli. This lymph gland tissue⁷ develops from plexuses of lymph vessels. The phagocytic power of lymph gland tissue is well known. Evidence, however, of the phagocytic power of lymph vessel endothelium is negligible.⁶



Appearance of hygroma in case 2 before complete excision.

Hygromas usually do not give rise to troublesome symptoms other than those of tumor. They may, however, grow to considerable size in infants and children and thus cause marked dyspnea. They have been mistaken for branchial cysts, lipomas, tuberculous glands, lymphangiomas, lymphomas and carotid tumors. Hygromas of the neck are usually lobulated and appear on the side and usually in the lower half of the neck. They are not attached to the skin but rather to the deep structures. Signs of inflammation are lacking. They transmit light. Aspirations reveal lymph, which may be almost completely removed, but refilling occurs rapidly. The diagnosis should not be difficult.

The treatment of hygroma colli is complete surgical excision. If the tumor extends into the mediastinum, this may be difficult and dangerous. Under such circumstances partial excision and packing may be done with excellent permanent results. Radium treatment

From the Surgical Department, Division B, of the Jefferson Hospital.

1. Dowd, C. N.: Hygroma Cysticum Colli, *Ann. Surg.* 58: 112 (July) 1913.

2. Vaughn, A. M.: Cystic Hygroma of Neck, *Am. J. Dis. Child.* 48: 149 (July) 1933.

3. MacGuire, D. P.: Cystic Hygroma of the Neck, *Arch. Surg.* 31: 301-307 (Aug.) 1935.

4. Sabin, Florence R.: The Method of Growth of the Lymphatic System, *Science* 44: 145, 1916.

5. McClure, C. F. W.: The Endothelial Problem, *Anat. Rec.* 22: 219, 1921.

6. Drinker, C. K., and Field, M. E.: *Lymphatics, Lymph and Tissue Fluids*, Baltimore, Williams & Wilkins Company, 1933, p. 35.

7. Robinson, A., in Cunningham, D. J.: *Textbook of Anatomy*, ed. 5, New York, William Wood & Co., 1930.

has been tried in children. Figi⁸ reported thirteen such cases, in three of which a cure was obtained. Three patients were improved and seven died of infection. Radium treatment must extend over a long period of time. Aspiration of the fluid contents followed by injection with a sclerosing solution has been attempted. This treatment is not satisfactory for multilocular tumors because the larger cysts do not communicate.

Two adults have been treated for this condition in the Jefferson Hospital since 1908:

REPORT OF CASES

CASE 1.—A. B., a woman, aged 40, admitted to the hospital Sept. 7, 1908, complained of a lump on the right side of her neck. There was a history of tuberculosis in the mother and father. Fifteen years previous to admission the patient had a mass on the right side of the neck, which was incised and drained. She said it contained pus. After a long period of rest in bed the wound healed completely. A year and a half before admission a small lump appeared near the site of the previous mass. Growth was slow until four months before admission. Since then it had grown rapidly. The patient was poorly developed and was emaciated. The throat was normal. On the right side of the neck was a rounded mass, which extended from the mastoid process posterior to the sternocleidomastoid to a point $1\frac{1}{2}$ inches above the clavicle. It was irregular, soft and fluctuating, but there were no signs of inflammation. The temperature, pulse and respiratory rate were normal. Excision was done by Dr. E. J. Klopp, September 8, under ether anesthesia. Incision was made along the posterior border of the sternocleidomastoid muscle, which gave approach to three cysts attached to but not communicating with it. One was ruptured in removal. The wound was drained but healed completely in fifteen days. The unruptured cysts were sent to the pathologist. His report was as follows: The specimen consisted of two globular masses, clearly cysts, 5 by 2.5 cm. in diameter. The outer walls were smooth and very thin. Incision revealed amber colored fluid containing considerable white granular greasy substance. The microscopic examination revealed that the walls of the cyst were composed of dense, wavy, fibrous tissue. In one area this tissue contained a small, encapsulated collection of lymphoid tissue. The lining of the cyst was smooth and no epithelium was observed. In areas there was a single layer of flattened cells which was considered to be endothelium.

The diagnosis was cystic hygroma.

CASE 2.—L. L. S., a man, aged 28, had always been in good health save for an anal fistula, which was removed by operation in 1919. In 1925 he first noticed a swelling in the lower part of the neck on the left side. This increased rapidly to its present size. Several aspirations were done. A yellow serous fluid was removed, but the tumor promptly regained its original size. The only other symptom was mild pain referred down the arm. This was felt after the arm was lifted.

Examination previous to operation revealed a large tumor just above the left clavicle not attached to the skin, as shown in the accompanying illustration. It was lobulated, gave a sense of fluctuation and was fixed to the deep structures of the neck. There was no local heat or other evidence of inflammation. The tumor transmitted light. The temperature and pulse were normal. A diagnosis of hygroma was made.

Oct. 22, 1927, I completely removed the tumor under ether anesthesia. It was made up of thin-walled cysts containing lymph and was attached to the deep vessels of the neck. The cysts were ruptured and completely emptied during operation, but drainage was not needed and the wound healed promptly. Dr. Baxter L. Crawford studied the specimen microscopically. His report was as follows: The walls of the large cysts were very thin and composed of connective tissue of loose texture and fat. Numerous small capillary-like vessels, some of which contained blood, were scattered through the connective tissue. The lining was smooth in areas with a single layer of flattened endothelial cells covering the surface. In other areas the

surface was more irregular, with small projections into the cavity. In the surrounding connective tissue there were numerous small similar cysts. No lymphoid tissue or evidence of inflammatory reaction was noted.

The diagnosis was cystic hygroma.

There had been no recurrence of the condition ten years after operation.

SUMMARY

Hygromas of the neck are thin-walled cystic tumors lined with endothelium and containing lymph. They grow from lymph sacs or buds that appear, in embryologic development near the junction of the internal jugular and subclavian veins.

The endothelial cells lining these tumors are structurally different from and thicker than those lining lymphatic capillaries. They are structurally the same as blood capillary endothelial cells, which they resemble functionally, for they apparently produce the contained lymph. Evidence of phagocytic power is negligible. The diagnosis is not difficult. These tumors rarely develop in adults. The treatment is complete surgical excision or partial excision and packing.

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STUDIES IN THE EVALUATION OF MAMMOGRAPHY

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The utilization of opaque substances in the diagnosis of disorders of the breast has been the subject of several enthusiastic reports in the recent literature. Hicken and his co-workers¹ have reported 350 injections of the lactiferous ducts for diagnostic purposes with only two mishaps; namely, multiple abscesses of the breast following injections in the presence of acute mastitis. Their study led them to conclude that mammography is both efficient and safe.

Hicken compares the use of colloidal thorium dioxide, lipiodine-Ciba, hippuran (Mallinckrodt), diodrast (Winthrop), bismuth oxychloride (Mallinckrodt), 15 per cent sodium iodide, and air. He believes that colloidal thorium dioxide is the least irritating and most suitable because its fluidity permits the filling of the smallest lacteal ducts and acini and yet it is of sufficient density to cast satisfactory shadows.

The technic recommended is as follows:

The breast is thoroughly cleansed as for any surgical procedure. Gentle massage of the nipple expresses small droplets of secretion or inspissated plugs of material from the lactiferous ducts. In this manner, the openings of the ducts are accurately located and can be readily cannulized by a blunt no. 25 gage needle. The contrast fluid is then injected into the duct until a sense of discomfort is experienced by the patient. This is repeated until all available ducts, usually eight or ten, have been injected, and then stereoscopic roentgenograms are taken.

The combined appeal of safety, simplicity and accuracy of diagnosis led to similar investigations in a series of patients with suspected disorder. The technic, as

Read before the Chicago Gynecological Society, Dec. 17, 1932.
From the Departments of Gynecology and Roentgenology of the Michael Reese Hospital.
1. Hicken, N. F.: *Mammography: The Roentgenographic Diagnosis of Breast Tumors by Means of Contrast Media*, Surg., Gynec. & Obst., 59:593-603 (March) 1932. Hicken, N. F.; Best, R. R.; Allen, C. F., and Harris, T. T.: *The Preoperative Visualization of Breast Tumors*, J. A. M. A., 108:864-867 (March 13) 1932. Hicken, N. F.; Best, R. R., and Tollman, J. P.: *Mammographic Recognition of Intra-epithelial Papilloma of the Breast*, Am. J. Surg., 30:611-617 (June) 1932. Hicken, N. F.: *Radiographic Demonstration of Breast Lesions*, Radiol. & Clin. Photog., 13:2-9 (April) 1932.

8. Figi, F. A.: *Radium in the Treatment of Multilocular Lymph Cysts in Children*, Am. J. Roentgenol., 21:473 (May) 1929.

recommended, was followed carefully. Excellent roentgenograms of the ductal system of the breast were obtained in almost every instance.

There is no doubt as to the diagnostic value of the procedure. Nor can there be any question of its safety when injection is followed by surgical removal of the involved breast. The question of the fate of colloidal

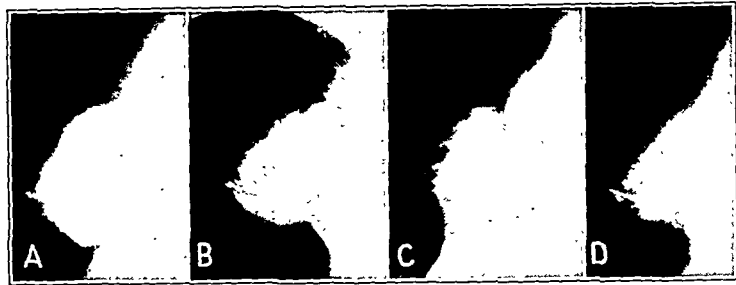


Fig. 1 (case 1).—On successive examinations the colloidal thorium dioxide was unchanged in the breast for seven months; A, film taken Feb. 8, 1937, at the time of the injection of the contrast medium; B, February 19; C, March 21; D, September 21.

thorium dioxide and its effect on breast tissue when the breast is not removed following injection has not been studied.

Hickens states that the terminal protective sphincter which guards the ductal orifice prevents the injected colloidal thorium dioxide from escaping and that the colloidal thorium dioxide may remain in the breast for as long as five months after injection; furthermore, that "thorotrast has but a very mild tissue reaction and can be used with complete safety."

Thorotrast (Heyden) is a stabilized 25 per cent solution of colloidal thorium dioxide. Its chief value lies

Even smaller quantities of thorium dioxide sol will produce marked local tissue changes. Selbie⁴ injected 1.3 cc. of this product into the flank of each of sixty rats. He found that the thorium dioxide sol had remained localized in firm, yellow nodules on section, such nodules showed many macrophages which had ingested the colloidal thorium dioxide in the form of highly refractile, deep yellow granules. After following these rats carefully for fifteen months, he found that there were definite tumors in fourteen. Each such tumor proved to be a typical spindle cell sarcoma. Furthermore, autoplasts were successful in five and transplantation was successful in two.

Colloidal thorium dioxide owes its carcinogenic properties to its disintegration products, which maintain their radioactivity for years. The danger lies in the highly destructive activity of the alpha rays that are given off. Furthermore, the disintegration products are mesothorium and radiothorium, the two main constituents of luminous paints which produced fatal poisoning as well as osteogenic sarcomas in dial painters as the result of ingestion.⁵ The importance of particle radiation should be stressed. An examination of particle equivalents, as pointed out by Meyer,⁶ is given in the accompanying table.

A number of patients in the series under discussion were subjected to mammography, with colloidal thorium dioxide serving as the contrast medium. In none of those under consideration was it necessary to follow the roentgen studies by immediate surgery, and the opportunity was therefore seized for follow-up roentgen studies to determine the fate of the injected colloidal thorium dioxide and of the breast tissue itself. Repeat roentgenograms were taken every few months after it became obvious that the material was remaining unchanged for a long time. In each instance the

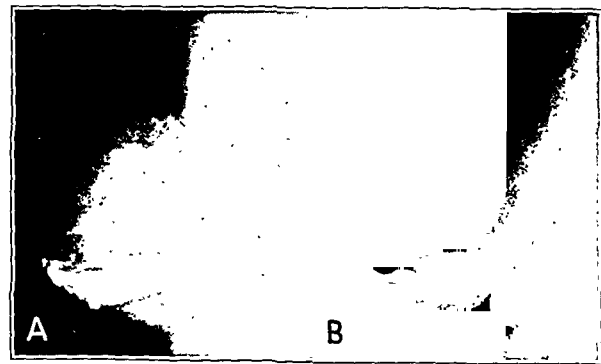


Fig. 2 (case 2).—A, original film taken Nov. 24, 1937; B, colloidal thorium dioxide unchanged after ten months.

in the fact that it is opaque to roentgen rays and throws a deep shadow in roentgenograms. Being miscible in all proportions in body fluids, it has been introduced into various body cavities and into the general circulation with no immediate harmful effects. A recent editorial² calls attention to the dangers of its use, especially when the solution remains in the body for any length of time. This danger results from its most important characteristic: its radioactivity. This editorial further points out that the degradation products of thorium emit alpha rays more penetrating than those of the radium series and that this ray is about 10,000 times as toxic to tissues as the gamma ray which is used therapeutically. Taft³ measured the gamma ray equivalent of 75 cc. of thorium dioxide sol by means of the Geiger counter and found it to be the equivalent of 1.37 micrograms of radium. Since 2 micrograms has produced symptoms of radium poisoning, the margin of safety would appear to be too small when a full 75 cc. of colloidal thorium dioxide is used.

shadows remained relatively unchanged even when as much as one year had elapsed since the original injection.

CASE 1.—Mrs. F. V., aged 40, a widow, complained of a slight bloody discharge from the left nipple. This followed a series

2. Potential Hazards of the Diagnostic Use of Thorium Dioxide Sol, J. A. M. A. 108: 1656 (May 8) 1937.
3. Taft, R. B.: The Radioactivity of Thorium Dioxide Sol, J. A. M. A. 108: 1779-1781 (May 22) 1937.

4. Selbie, F. R.: Experimental Production of Sarcoma with Thorotrast, Lancet 2: 847-848 (Oct. 10) 1936.
5. Martland, H. S.: The Occurrence of Malignancy in Radioactive Persons: A General Review of Data Gathered in the Study of the Radium Dial Painters, with Special Reference to the Occurrence of Osteogenic Sarcoma, Am. J. Cancer 15: 2435-2516 (Oct.) 1931. Martland, H. S.: Occupational Poisoning in the Manufacture of Luminous Watch Dials, J. A. M. A. 92: 466 (Feb. 9) 1929.
6. Meyer, Stefan, and Sweidler, H.: Radioactivite, ed. 2, Berlin, Teubner, 1927.

of injections of estrogenic substance for the relief of rather severe postirradiation menopausal symptoms. Thorium dioxide was injected on Feb. 8, 1937. No abnormality was noted on the original films. Repeat roentgenograms were taken on February 19, March 21 and September 21. Comparison of these films (fig. 1) shows the colloidal thorium dioxide to be unchanged for the entire seven month period. The patient complained of constant dull pain in the breast together with tenderness.

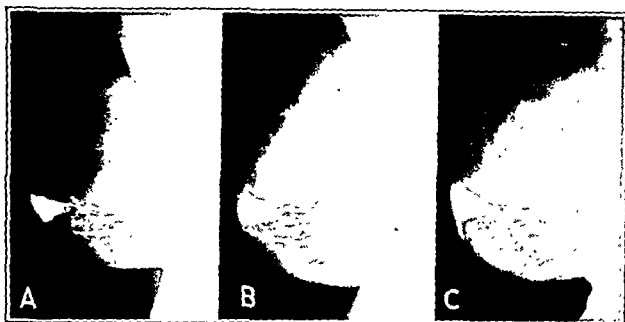


Fig. 3 (case 3).—A, original film taken at the time of injection, April 10, 1937; B, film taken August 17; C, film taken October 27.

CASE 2.—Mrs. J. H., aged 58, complained of a slight bloody discharge from the left nipple for two days. This also followed repeated injections of estrogenic substance for the relief of menopausal symptoms. Eight cubic centimeters of colloidal thorium dioxide was injected on Nov. 24, 1937. The films taken revealed no pathologic changes. Ten months later the patient complained of continuous pain in the left breast together with considerable tenderness. Examination revealed the breast tissue to be nodular and sensitive. Repeat roentgenograms showed the colloidal thorium dioxide to be unchanged since the original injection ten months previously (fig. 2). There was a tender mass about 4 cm. in diameter lying just beneath the nipple and areola. This was excised. Healing was delayed for about four weeks—there being a low-grade infection present with continuous viscid and oily discharge. The wound healed by secondary intention. The remaining breast tissue remains sensitive.

CASE 3.—Mrs. F. S., aged 42, married, had an injection of colloidal thorium dioxide (7 cc.) into the right breast on April 10, 1937. The roentgenograms revealed no pathologic changes.

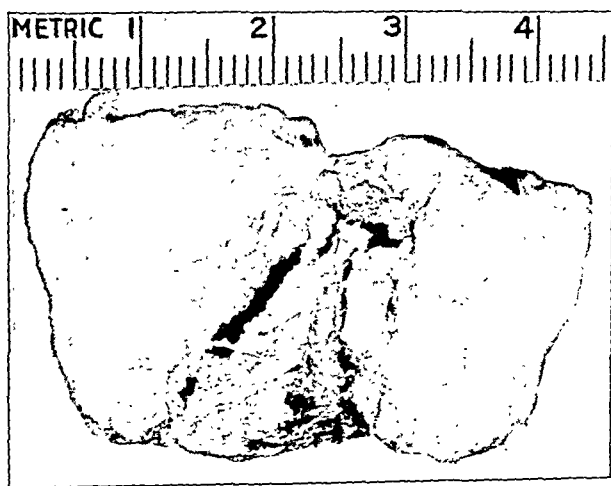


Fig. 4 (case 2).—Tissue removed from cut surface. This shows small irregular mass with no capsule or definite line of demarcation. Cut surface is smooth and white.

Repeat films were taken on August 17 (fig. 3), at which time the patient complained of pain in the breast and tenderness. The breast was sensitive to clothing and the patient was in constant discomfort. The roentgenograms showed the colloidal thorium dioxide to be practically unchanged in appearance. Nine weeks later (October 27) films were again taken and no changes were noted. The large accumulation of colloidal thorium dioxide and the surrounding breast tissue were excised at this time because

of the constant pain and discomfort. This incision also healed very slowly, there being a constant viscid discharge from the wound, accompanied by an apparently indolent infection. Healing was not completed for five weeks following operation.

Five of the patients who were followed complained of persistent pain in the injected breast. This, combined with a moderate degree of tenderness and sensitivity to clothing, caused persistent and annoying discomfort. Patient 2 complained of constant drainage from the nipple for eight months in addition to the symptoms mentioned, and finally patients 2 and 3 presented firm, tender and painful nodules after ten and six and one-half months, respectively. These nodules were such a source of discomfort to these patients and caused such mental unrest because of the cancerphobia which developed that it was deemed advisable to remove them by surgical excision.

In each the tumor, which was sharply defined on palpation and transillumination and seemed sharply defined on follow-up roentgenograms, proved to be irregularly defined and difficult to outline when the breast was incised. Each was then removed by wide dissection and the incisions were closed without drain-

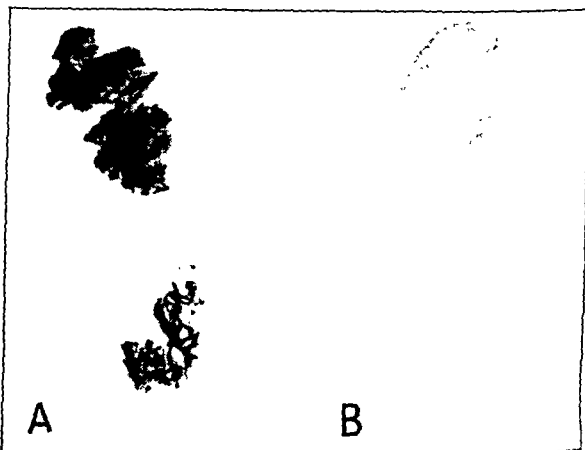


Fig. 5 (case 2).—A, roentgenographic appearance of tissue removed; B, appearance when film was exposed to excised tissue and lower half shielded by lead plate.

age. Both incisions broke down during the second post-operative week, drained a seropurulent oily material for several weeks and healed very slowly and very poorly. Apparently the tissue changes produced delayed healing to a considerable degree.

The tissue removed in case 2 was studied for opaque material by roentgenograms, for radioactivity by means of exposure of tissue to x-ray films and the Geiger counter,⁷ and histologically.

Figure 4 shows the tissue removed. The mass measured about 2 by 2 by 1 cm. On section it presented a smooth white surface which seemed oily. It was poorly demarcated, presenting no capsule.

Figure 5 A shows the x-ray appearance of the tissue, while figure 5 B is a reproduction of an x-ray film the upper half of which was exposed to the tissue while the lower half was protected by lead foil. It should be noted that the darkening in the upper portion of the film and the distribution of the darkening corresponds to the areas of greatest concentration of the opaque material.

This block of breast tissue was tested for radioactivity by means of the Geiger counter,⁸ and a com-

7. Taft, R. B.: Technical Data Concerning the Geiger Counter. Radiology 26: 756-757 (June) 1936.
8. Bowers, B. F., and Masson, J. C.: Mastitis Following the Use of Thorium Oxide, Proc. Staff Meet., Mayo Clinic 12: 522 (Aug. 25) 1937.

parison was made of the gamma ray output of the excised breast tissue with 2 cc. of colloidal thorium dioxide. It was determined that 16 Gm. of breast tissue contained the equivalent of 0.55 Gm. of thorium dioxide or 2.25 cc. of colloidal thorium dioxide.

Thus the colloidal thorium dioxide injected into the breast under consideration remained definitely radioactive for ten months, from Nov. 24, 1936, to Sept. 21, 1937, at which time it was removed.

Microscopic examination of the removed breast tissue by Dr. Otto Saphir revealed the following changes: Sections stained with hematoxylin and eosin showed numerous cords or nests of pigmented cells separated by thin strands of dense hyalinized connective tissue. In the peripheral parts of this lesion occasional distorted lobules and isolated ducts or acini were often associated with a granulomatous response. Bordering the lesion, several lobules of normal breast tissue were noted (fig. 6). On close examination the cords of cells were



Fig. 6 (case 2).—Section of tissue $\times 80$. Note the nests of pigmented cells separated by dense hyalinized connective tissue, occasional distorted lobules and isolated ducts. Giant cells can also be seen.

composed of polygonal, usually well demarcated, cells with pyknotic, usually eccentric, single nuclei and cytoplasm replete with grayish tan granules, which varied moderately in size and shape (fig. 7). These appeared in unstained preparations as tan, partly refractile, isotropic granules. They did not react with the sudan III stain for fat or with the prussian blue stain for iron pigment. In some areas the individual cell boundaries were lost and the granules appeared strewn in a connective tissue stroma. Elsewhere in an unusual focus a slight to moderate degree of necrosis was observed. In such areas, and also associated with the inflammatory reaction to be mentioned, small foci of calcification were noted. The granulomatous response consisted of foci of lymphocytes often closely related to breast ducts or acini in which were numerous irregularly shaped, large, multinucleated, usually nonpigmented giant cells. These contained up to approximately thirty nuclei distributed at random throughout the cytoplasm (fig. 8).

The removal of the nodule in case 3 afforded the opportunity of studying the effect of the radioactive

material on breast tissue after a shorter period of time (six and one-half months). The nodule contained opaque material as shown by roentgenogram and by histologic studies by Dr. Otto Saphir. Section revealed

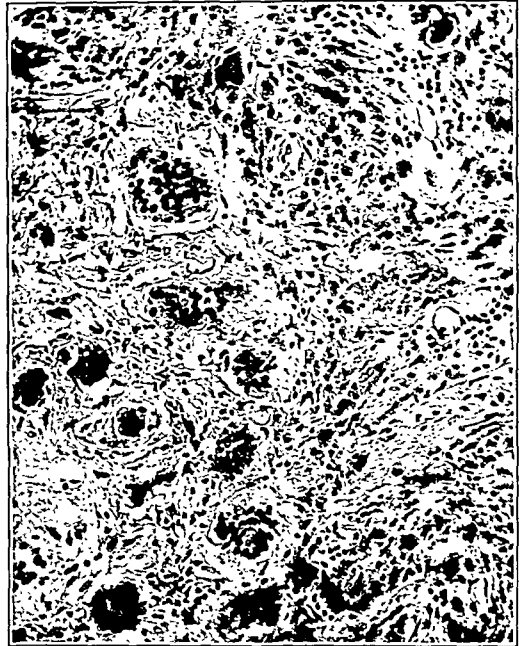


Fig. 7.—Appearance of section magnified 128 diameters. Note the giant cell formation, round cell infiltration, hyalinized connective tissue and areas of necrosis.

nests and cords of pigmented cells separated by a hyalinized connective tissue stroma as in the previous specimen with the absence, however, of granulomatous

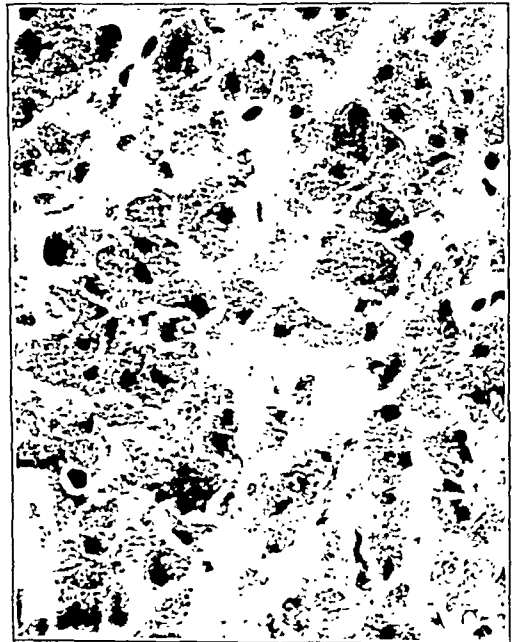


Fig. 8.—Appearance of section magnified 360 diameters. Note areas of necrosis, eccentric nuclei and partly refractile, isotropic granules filling each cell.

features. By the use of hematoxylin-eosin stain the cells appeared polygonal or oval, contained eccentric, hyperchromatic single nuclei and were filled to capacity with irregular, coarse grayish tan granules. Foci of

cellular disintegration and necrosis were not observed. The granules were easily visible in the unstained preparations and did not take the sudan III or prussian blue stains nor did they react positively as bile pigment. They were nonrefractile in a field of polarized light. A rare, fairly normal appearing breast duct was observed on the

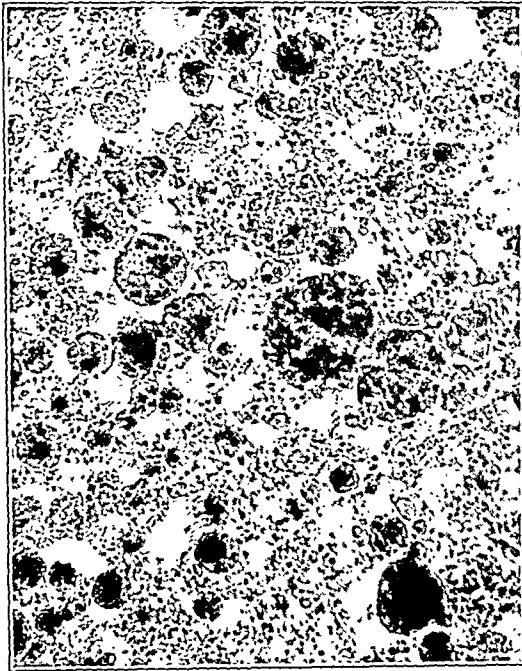


Fig. 9 (case 3).—Discharge from nipple magnified 304 diameters.

periphery of the lesion. Examination of the secretion from this breast revealed round or oval pigment containing cells resembling in appearance and in staining reaction the described cells within the breast (fig. 9).

Case 4 is made available through the courtesy of Dr. J. C. Masson of the Mayo Clinic and has been reported previously:⁸

CASE 4.—A white woman, aged 41, unmarried, admitted to the Mayo Clinic for the first time Jan. 11, 1937, complained of pain, soreness and a movable hard lump in the lower half of the abdomen. On examination a large pelvic-abdominal tumor and chronic cystic mastitis of the left breast were discovered. Simple mastectomy of the right breast had been performed elsewhere in 1932.

Abdominal exploration was advised and carried out January 12, at which time total abdominal hysterectomy, bilateral salpingectomy, left oophorectomy for chronic cystic oophoritis and appendectomy were performed. Convalescence was uneventful and the patient was dismissed from the clinic on the twenty-first postoperative day and given instructions to have periodic examinations of the left breast. She continued to improve after dismissal.

The patient returned to the clinic May 21 because of pain in the left breast. She stated that one month previously she felt the left breast and thought the lumps were getting larger. She consulted her physician, who injected thorium dioxide into the left nipple with a hypodermic needle and syringe on May 3. A roentgenogram was made and no tumor was visualized. The patient had pain and soreness extending into the axilla immediately following the injection. She consulted her physician again on May 18, fifteen days after the injection, and it was suggested that the breast be incised. She then decided to return to the clinic. The left breast was found to be hardened, red and tender. A roentgenogram of the thorax revealed evidence of radiopaque material in the left breast. Detailed roentgenologic examination of the left breast revealed evidence of thorium in the ducts. No filling defects or tumors could be seen. The appearance suggested normal mammary structures and an exces-

sive amount of thorium. Simple mastectomy was advised and carried out by Dr. J. C. Masson on May 25, twenty-two days after the injection of colloidal thorium dioxide. Pathologic examination revealed a chronic mastitis with extensive fat necrosis; the cells contained granules of thorium. Convalescence was uneventful. The patient was dismissed from the hospital on the sixth postoperative day.

Microscopic study by Dr. Otto Saphir showed the following: Section consisted of two pieces of tissue, one of which demonstrated large plaques of granular cells in a fine connective tissue matrix. In several regions unchanged ducts were observed (fig. 10). Others were associated with a few lymphocytes and some were closely surrounded by the granular cells. In one duct such cells were noted free in the lumen. The granular cells were oval, round or polygonal and consisted of a coarsely and irregularly granular, almost colorless, cytoplasm and a central stippled fairly well demarcated nucleus. In some foci cell boundaries and nuclei were indistinct and masses of granules were apparently free in the connective tissue.

COMMENT

Three patients suffered pain and tenderness of the breast following injections of colloidal thorium dioxide into the lacteal ducts for diagnostic purposes. The fourth patient had an acute mastitis with tissue necrosis of a degree sufficient to require mastectomy. Follow-up roentgenograms showed the colloidal thorium dioxide lying unchanged in the lacteal ducts for as long a period as ten months after the original injection. In two of these the discomfort warranted the removal of the involved tissue for relief.

This tissue contained the colloidal thorium dioxide, which remained definitely radioactive. The particle emission of thorium is comparable if not equal to that of radium. No one, it is felt, would advocate the local introduction of unfiltered radium element or solution



Fig. 10 (case 4).—Eccentric cells with granular cytoplasm and granules free in connective tissue ($\times 76$).

into living tissue. It would seem that the use of radioactive material such as this is fraught with definite danger in spite of the considerable quantitative difference in particle emission.

The retained colloidal thorium dioxide provoked a marked and apparently characteristic tissue reaction characterized by a typical foreign body reaction. In

addition there was tissue necrosis corresponding roughly to the length of time that the tissue was exposed to the colloidal thorium dioxide. Case 4, following the retention of the colloidal thorium dioxide for four weeks, showed macrophage infiltration plus a few areas of tissue necrosis in which the cell boundaries and nuclei were somewhat indistinct. The tissue taken in case 3 was exposed to the colloidal thorium dioxide for six and one-half months. Here there was the same macrophage infiltration but to a more marked degree together with a more definite connective tissue hyalinization. Case 2, following exposure to colloidal thorium dioxide for ten months, showed many larger areas of tissue necrosis, more hyalinization and a marked giant cell infiltration as well as the largest number of macrophages.

CONCLUSIONS

1. Colloidal thorium dioxide injected into the lacteal ducts for purposes of mammography remains unchanged for many months and is the source of considerable physical and mental discomfort to the patient.

2. Thus injected, it remains radioactive.

3. Histologic studies suggest the progressive development of a granulomatous change in response to the presence of a foreign material, which is radioactive together with a varying degree of tissue necrosis.

4. In view of the observations made, mammography by means of colloidal thorium dioxide would seem to be fraught with potential danger and therefore to be an unsafe procedure.

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THE LIMITATIONS AND DANGERS OF MAMMOGRAPHY BY CONTRAST MEDIUMS

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NEW ORLEANS

More than one writer has called attention to the fact that the very results of the campaign to educate the public in the facts of cancer have placed a heavy responsibility on the medical profession. The figures from the Halsted Clinic are typical. During its early years, as the late Joseph Colt Bloodgood noted in one of his last papers, more than 80 per cent of the tumors of the breast treated in it were malignant, whereas in later years almost 90 per cent were benign. That did not mean, he hastened to explain, that the incidence of malignant tumors was decreasing; it merely meant that more and more women were seeking advice for conditions which they had formerly ignored. As this trend has continued, there has come to the physician's attention an increasingly large group of borderline cases in which diagnosis is difficult and the result of diagnosis momentous. It is this group of cases which supplies the impetus for new methods of diagnosis and which is chiefly responsible for the enthusiasm with which all such methods are hailed and employed.

The most recent of these methods is mammography, which is the radiographic demonstration of tumors of the

breast after injection of the ducts with some opaque medium. It was first mentioned in the literature in 1930, when Ries¹ reported a single case in which iodized poppy-seed oil was employed, but does not appear again until the spring of 1937. Then Hicken and his associates² at the Nebraska College of Medicine reported the use of this method in fifty-six cases, in which 314 pictures had been made over a period of eighteen months. A few injections were made with iodized oil, but stabilized colloidal thorium dioxide (thorium dioxide sol, thorotrast-Heyden) was used in most of the cases.

In his first communication Hicken stated that by this method it is possible to differentiate localized from infiltrating growths, solid from cystic tumors, and simple retention cysts from cystic degeneration of the breast. He considered it particularly valuable in determining the location, number and size of papillomatous tumors but did not advise it for frankly malignant growths or in cases in which acute infection was present; his only untoward result was in such an acute case. Subsequent communications on the subject, the most recent in December 1937,³ are to substantially the same effect. The author and his associates are conservative in their expressions, but they leave no doubt of their conviction of the value of this method.

Hicken also leaves no doubt of his conviction that stabilized colloidal thorium dioxide is a harmless agent for this purpose. He says:

If there is a hazard in such procedures [the intravenous use of colloidal thorium dioxide], it does not exist in mammography, for the injection is not intravenous but into the mammary ducts, which are normally excretory in function; the Thorotrast does not get into the blood stream. In addition, the quantity injected is considerably less than that used for visualization of the liver and spleen, and the mammary ductal tissue has very low if any absorptive powers, so the amount that could be absorbed would be practically nil. Much of the Thorotrast can be removed from the injected ducts by lavaging with saline solution and then evacuating by means of a breast pump. The quantity of the medium that might remain after these cleansing irrigations is so small that apprehension concerning its harmful effect is entirely unwarranted. No untoward reactions from Thorotrast have been encountered in the series of mammographs we have made.

Primarily to establish the practical value of mammography in the diagnosis of conditions, we undertook its use in a series of patients admitted to our services in the New Orleans Charity Hospital. Our study, however, soon entered on a phase which we had not planned, and as a result we are reporting herewith not so much the diagnostic implications of this method as the risks associated with it, of which the literature now available gives no real conception.

Our material consists of twenty-five clinical cases in which eighty-five pictures were taken. In addition, we used the method on twenty-eight breasts in four experimental animals. The study of normal breasts which we had planned as a control series was not carried out because of the reactions that occurred in some of our earliest cases following the injections. We have, therefore, only two nonsurgical cases; in one there is a

1. Ries, Emil: Diagnostic Lipiodol Injection into Milk Ducts Followed by Abscess Formation, *Am. J. Obst. & Gynec.* 20: 414-416 (Sept.) 1930.
2. Hicken, N. F.; Best, R. R.; Moon, C. F., and Harris, T. T.: The Preoperative Visualization of Breast Tumors, *J. A. M. A.* 108: 864-867 (March) 1937. Hicken, N. F.: Mammography, *Surg., Gynec. & Obst.* 64: 593-603 (March) 1937.

3. Hicken, N. F.: Radiographic Demonstration of Breast Lesions, *Radiol. & Clin. Photog.* 13: 2-6 (April) 1937; Mammographic Recognition of Intracystic Papilloma of Breast, *Am. J. Surg.* 53: 611-617 (June) 1937. Hicken, N. F.; Best, R. R. and Hunt, H. B.: Discharges from the Nipple, *Arch. Surg.* 35: 1079-1094 (Dec.) 1937.

From the Department of Surgery of Louisiana State University Medical Center and the surgical services of the School in Charity Hospital in New Orleans.

The members of the Department of Radiology in Charity Hospital (Dr. Amédée Granger, director), the members of the Department of Pathology in the Louisiana State University Medical Center (Dr. Rigney D'Amoy, director) and Dr. D. D. Baker of the Department of Anatomy of Louisiana State University assisted in this study.

lactating breast and in the other a large pendulous breast. Neither reveals any significant appearance.

We followed practically without change the technic of injection described by Hicken. The patient was given the usual careful general and local examination at the time of admission, and a plain roentgenogram of the

plate under the breast, the patient standing or sitting as was most convenient, and the lateral view with the breast supported by Meyer's angle board.

Operation was done in twenty-three of the twenty-five cases, either by us or under our personal observation. Radical mastectomy was done in seven cases, simple amputation of the breast in three cases and simple excision of the tumor in thirteen cases. The gross specimen was examined and photographed, and the sections were studied with the pathologist in an attempt to correlate the x-ray appearances with the changes revealed grossly and microscopically. In most of the twenty-three surgical cases operation was done within two or three days after the injection. It was deferred for a month in one case because the patient had diabetes, which was rather difficult to stabilize.

In thirteen of the twenty-three surgical cases the mammographic diagnosis corresponded with the clinical diagnosis and was later confirmed in the laboratory. It is not unfair to say, however, that in none of this group of cases did the use of this method add anything of great value to our knowledge. Furthermore, as the following cases show, possible misinterpretation of the radiographic studies might have given rise to serious consequences had they been relied on alone.

REPORT OF CASES

Patient 1 (B. F., a white woman aged 57) complained of bleeding from the left nipple for two months. Examination revealed a painful, movable, semisolid mass, 4 cm. in diameter, in the lower outer quadrant of the left breast; pressure on it caused bright red blood to exude from the nipple. X-ray examination after the injection of the ducts of the affected quadrant

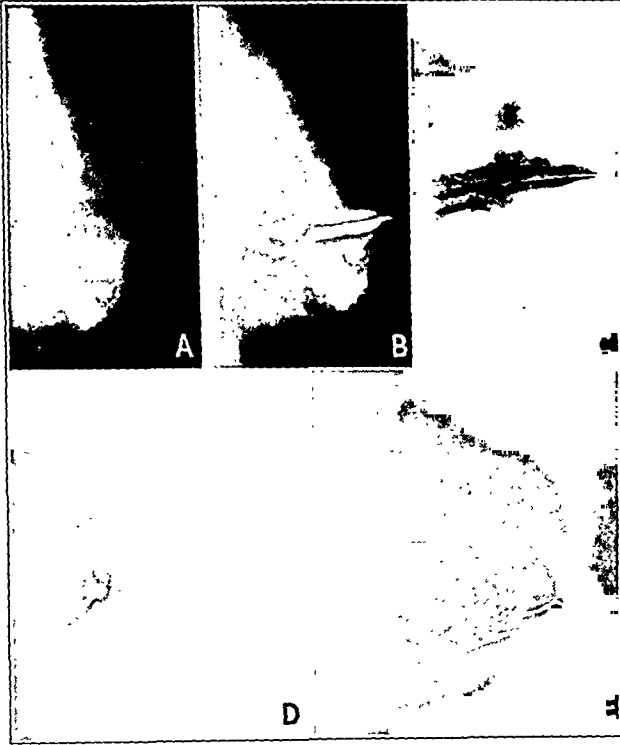


Fig. 1.—A, B, and C (case 1), intraductal and intracystic papillomas of the left breast revealed by mammography, which failed to reveal an early carcinoma in the same quadrant. D (case 2), advanced carcinoma. E (case 3), advanced carcinoma.

breast was made. Our experience with this type of radiographic examination of the pathologic breast is not extensive, but, such as it is, it does not impress us as of value in the borderline cases, the variety in which some diagnostic aid would be most welcome. Then, under aseptic surgical precautions, from two to four ducts of the involved quadrant of the breast were injected with the opaque medium, which was introduced by means of a blunt no. 25 gage hypodermic needle. If the orifice of the duct could not be identified by the expression of droplets of secretion, the needle was introduced by direct vision. Slight pressure was required to introduce it into the duct, but, once it had entered, it usually continued down into the duct by its own weight. The injection was continued until the patient complained of pain; in no case was more than 0.5 cc. used in a single duct, and only 0.25 cc. was injected in many cases. Iodized oil was used in one case, but we found it less satisfactory than stabilized colloidal thorium dioxide, which was used in all the other cases; even when the solution was warmed to body temperature its extreme viscosity made injection difficult.

X-ray examination was made within one or two hours after the injection, though equally satisfactory pictures can be obtained after a longer time. Since it was not possible for us to employ the stereoscopic films advocated by Hicken, we substituted vertical and lateral views. The vertical view was taken with the x-ray

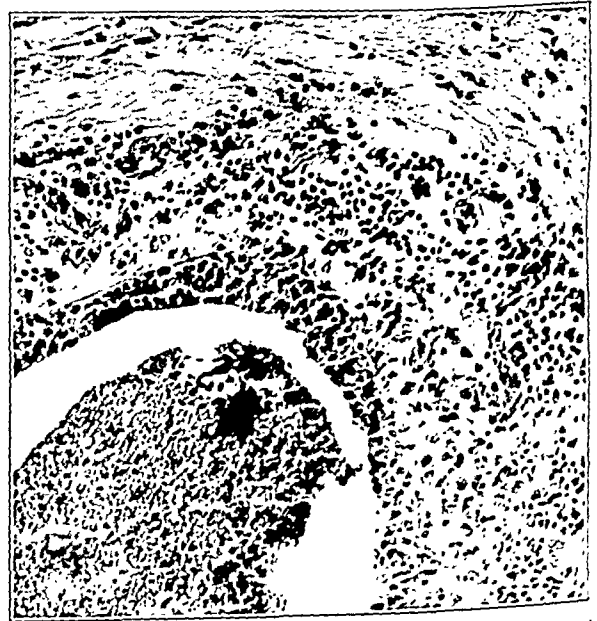


Fig. 2 (case 6).—Foreign body reaction (mild) in cystic disease caused by the injection of an opaque substance. Note the granules of thorium dioxide in the lumen of the duct.

revealed (fig. 1 A, B and C) a marked dilatation of the injected ducts and a clearly defined, large cyst; negative shadows within the dilated ducts and the cyst suggested the presence of generalized intraductal and intracystic papillomas. The x-ray diagnosis was confirmed in the laboratory following simple mastectomy. But the laboratory also detected an early carcinoma.

This possibility had naturally been considered clinically, but nothing in the roentgenogram, even when it was carefully restudied, suggested the condition. This case seems particularly significant in view of Hicken's repeated emphasis on the value of mammography in the diagnosis of papillomas.

Case 5 is another instance in which mammography furnished no clue to the presence of the malignant tumor

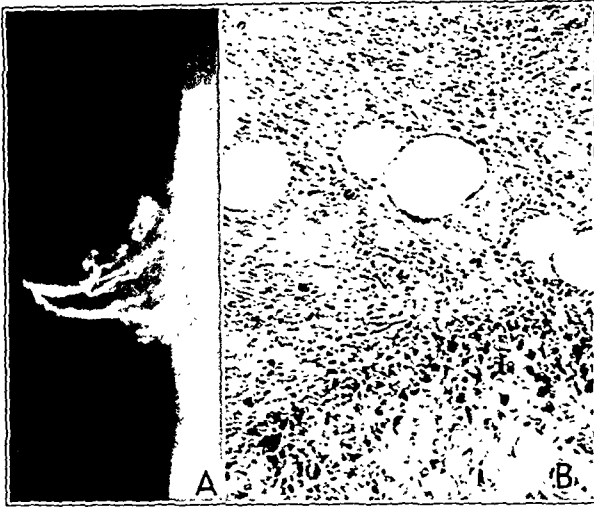


Fig. 3 (case 1).—"Shotty" right breast, corresponding to the left breast (fig. 1 A, B and C) in which mammography failed to reveal a malignant growth. B, foreign body reaction (marked) caused by the injection of an opaque substance into the right breast.

that was found to exist. A Negress aged 40 had a firm, irregular, somewhat fixed mass in the lower inner quadrant of the left breast which was clinically malignant and for which radical amputation was done. In case 2 (E. J., a Negress aged 67) and case 3 (R. G., a Negress aged 65) the diagnosis of malignancy was easily made from the mammographs (fig. 1 D and E), but in each instance the growth had advanced to such a point that clinically there was no doubt as to its nature.

Case 4 (E. DeC., a Negress aged 48) and case 18 (L. P., a Negress aged 39) are excellent illustrations of the difficulty of diagnosing possible malignant growths by this method. In case 4 the condition was clinically malignant. The patient had a hard, nodular, fixed mass, 3 cm. in diameter, in the upper part of the left breast; it had been present for about six months. X-ray study of the injected breast showed a faint soft tissue shadow in the upper portion. Many ducts in this area were blocked, apparently by the tumor, and others were displaced. The ducts in the middle and lower portions of the breast were dilated. In view of the clinical observations it was considered that the abnormalities revealed by the roentgenogram were due to malignant periductal infiltration, and the diagnosis of a malignant growth was confirmed by the laboratory. In case 18 the history, the physical examination and the absence of fixation suggested a benign condition, but the roentgenogram revealed the same type of dilatation and blockage of the ducts noted in the malignant tumor just reported. In this case the abnormality was evidently caused by the notable increase in fibrous tissue revealed on microscopic study, which confirmed the clinical and operative diagnosis of benign cystic disease.

In the nine cases of cystic disease studied by this method the usual observation was varying degrees of dilatation of the ducts in addition to definite cysts.

In the six cases of adenofibroma the chief effect of the tumor was displacement and compression of the ducts. Case 20 (H. Y., a Negress aged 18) is typical and is also a particularly good one in which to emphasize the importance of taking both lateral and vertical views. The lateral view, which showed a filling of the finest radicles in the upper half of the breast and a widening of the duct pattern, with incomplete filling in the midportion, was contrasted with the vertical view, which showed, in addition to incomplete filling, a definite compression and displacement of the ducts toward the midline.

The four cases in which laboratory examination of the amputated breast revealed a reaction to the injected substance are reported herewith:

CASE 6.—M. L., a Negress aged 20, complained of a firm, irregular, movable mass, 2 cm. in diameter, in the upper inner quadrant of the left breast, which had been present for a year. There were two similar but smaller masses in the inner middle third of the same breast. The clinical and radiographic diagnosis was cystic disease, which was confirmed by the laboratory examination following biopsy six days after the injection. Microscopic examination also revealed an early foreign body reaction in the periductal tissue, in which could be seen many leukocytes and many phagocytic cells containing particles of thorium dioxide (fig. 2).

CASE 1.—B. F., a white woman aged 57, was previously mentioned as having a malignant growth in the left breast, associated with intraductal papillomas, which was diagnosed clinically but was not revealed by mammography. The right breast, which was of the "shotty" type, had been injected at the same time as the left (fig. 3 A), and the patient was advised to submit to amputation within six weeks. She returned within a month, however, because of a mass the size of a hen's egg, which had developed in the lower inner quadrant of this breast. The mass was firm but not fixed. A similar lump, as large as a pigeon's egg, could be palpated in the upper outer quadrant. The breast was not painful or tender, and no glands could be palpated in the axilla. Carcinoma was suspected, and radical mastectomy was performed. The laboratory examination, however, revealed, instead of the suspected malignant condition, a marked foreign body reaction (fig. 3 B), which entirely



Fig. 4 (case 7).—Cystic disease and intracystic papillomas.

explained the clinical picture. There were large areas of necrosis, and under the microscope many phagocytic cells were seen which contained granules of thorium dioxide.

CASE 7.—A. B., a Negress aged 60, complained of painful, pendulous breasts which contained small, rather indefinite nodular masses throughout their substance. The radiographic diagnosis of cystic disease and intracystic papillomas (fig. 4 A and B) was confirmed in the laboratory after amputation of the breast, which had to be deferred for a month until the patient's diabetes could be stabilized. The delay furnished the opportunity for some interesting observations. Soreness promptly developed in both breasts following the injection of the

stabilized colloidal thorium dioxide. In the left breast it subsided promptly. In the right breast it was associated with an edema which persisted for ten days and with the development of a mass in the upper half. This mass grew rapidly, and gross examination after the breast had been amputated was strongly suggestive of carcinoma. Microscopic study, however, showed in addition to the cystic disease and intracystic papillomas already mentioned a marked foreign body reaction (fig. 5) of the type described in case 1. This reaction fully explained the masses which developed after the injection.

CASE 11.—L. G., a Negress aged 32, discovered a mass in the midportion of the right breast, beneath the areola, shortly before her admission. The mass, which was 4 cm. in diameter, was painful but not fixed. A thin, watery secretion could be expressed from both nipples. Two ducts of the affected quadrant were injected with iodized oil, and simple mammeotomy was done three days later. Laboratory examination confirmed the clinical and radiographic diagnosis of cystic disease and revealed also an early irritant reaction, evidenced chiefly by small areas of necrosis and by the presence of many leukocytes in the periductal tissue. Both in this tissue and within the lumen of the ducts, large vacuolated phagocytes could be seen.

COMMENT

These four cases are well worth putting on record, for only three similar reports seem to have appeared in the literature. Ries in 1930 reported an abscess of the breast which required amputation and which developed following the injection of iodized oil into the mammary ducts six weeks after lactation had ceased. Hicken, as we have noted, reported an abscess of the breast following the injection of colloidal thorium dioxide into a breast which was already the site of an acute infection. Sowers and Masson⁴ from the Mayo Clinic reported a case of extensive fat necrosis which required mammeotomy following the injection of colloidal thorium dioxide into a breast which was the site of a chronic mastitis. The necrosis in this case and the presence of



Fig. 5 (case 7).—Foreign body reaction (marked) caused by the injection of an opaque substance.

cells containing granules of thorium suggest precisely the same type of reaction that were encountered in the cases herein reported.

As soon as we realized the reaction likely to follow the use of opaque mediums in mamnography, we under-

4. Sowers, B. F., and Masson, J. C.: Mastitis Following Use of Thorium Dioxide. Report of Case, Proc. Staff Meet., Mayo Clin. 12: 529-531 (Aug.) 1937.

took a series of experiments in which we injected twenty-eight breasts in four dogs, using the same technic which we had employed in our clinical cases. The results are summarized in the accompanying table. One or two ducts were injected in each breast. Roentgeno-

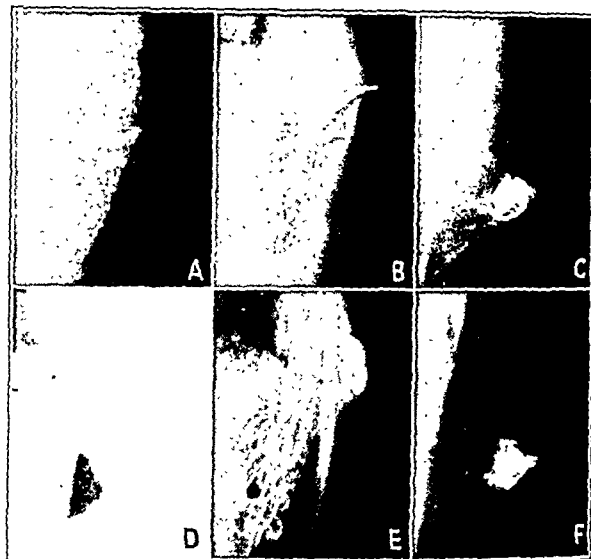


Fig. 6.—Experimental studies of ducts injected with various substances immediately after the injection and immediately after an attempt to remove the injected substances by lavage. A and D colloidal thorium dioxide; B and E, iodized poppy-seed oil; C and F, chloriodized poppy-seed oil-Lilly.

grams were made immediately after the injection, to make certain that there had been no extravasation of the injected material into the tissues, and were repeated before the breasts were amputated, which was done from ten to eighty days later.

Of the various opaque mediums used in our experimental work, stabilized colloidal thorium dioxide, iodized oil and chloriodized oil furnished easily the most satisfactory pictures. Hippuran, diodrast, sodium iodide and soluble iodophthalein were not of sufficient density to cast satisfactory shadows. Chloriodized poppy-seed oil (theridol Lilly) was more satisfactory than the last group of substances but not as satisfactory as the first. Iodized oil was open to the same objection as in our clinical work—that its viscosity made it difficult to inject.

It will be noted from the tabulation of experimental results that in twelve of the twenty-one breasts amputated after injection an inflammatory reaction of the foreign body type was noted, all but two of which were severe. Furthermore, the reactions to colloidal thorium dioxide and to iodized oil were of precisely the same type as had been noted in our clinical cases. The early or mild reaction to colloidal thorium dioxide was manifested by a periductal infiltration of leukocytes and of large phagocytic cells filled with refractile granules of the injected substance. The later or advanced reaction took the form of necrosis. Phagocytic cells filled with thorium dioxide were also present, as in the early reaction, and giant cells were found in some areas.

The reactions to iodized oil, chloriodized poppy-seed oil-Lilly and chloriodized oil were similar. The early or mild reactions were a periductal inflammation, polymorphonuclear cells and large vacuolated phagocytes being seen throughout the affected tissues. Actual necrosis was present in the more advanced reactions.

Hicken has suggested that after the x-ray studies are made the injected substance be removed from the

breast by lavage or by milking the ducts with a breast pump. We did not employ either of these methods clinically, but in four experimental breasts we did employ lavage, using 20 cc. of saline solution. The x-ray studies were repeated as soon as the lavage was completed. The shadows cast by the iodized oil and chloriodized poppy-seed oil-Lilly were practically unchanged, but it seemed to us that most of the thorium dioxide

with iodized oil, colloidal thorium dioxide and chloriodized oil a week before its puppies were born. After the puppies had nursed for a month and the breasts had thus been subjected to a physiologic lavage far more perfect than could ever be achieved by mechanical

Histologic Changes in Breasts Injected with Various Opaque Mediums

Dog	Breast Injected	Agent	Amputated In	Reaction	Comment
152R	A	Thorium dioxide sol	29 days	Marked	
	B	Chloriodized oil		Marked	
153R	A	Thorium dioxide sol	80 days	None	Studies made after dog had delivered puppies and nursed them for 30 days
	B	Iodized oil		None	
	C	Chloriodized oil		Mild	
155R	A	Iodized oil	22 days	None	
	B	Iodized oil		None	
	C	Chloriodized poppy seed oil-Lilly		Marked	
	D	Chloriodized poppy seed oil-Lilly		Marked	
	E	Thorium dioxide sol		Marked	
	F	Thorium dioxide sol		Marked	
166R	A	Thorium dioxide sol	11 days	Marked	Breast washed with saline solution after injection
	B	Thorium dioxide sol		None	
	C	Thorium dioxide sol		Marked	
	D	Thorium dioxide sol		None	
	E	Chloriodized poppy seed oil-Lilly		Mild	
	F	Iodized oil		Moderate	
	G	Iodized oil		None	Breast washed
	H	Iodized oil		Marked	
	I	Chloriodized poppy seed oil-Lilly		None	Breast washed
	J	Chloriodized poppy seed oil-Lilly		None	Breast washed



Fig. 8.—Demonstration of the lobes of a (right) breast by the injection of the ducts with materials of various colors, after which the tissues were removed by the use of corrosive agents. No communication is evident between the lobes. Note the apparent unevenness of distribution of the ducts, which is due to the fact that the ducts of the lower lobes, because of the dependent position of the breast, are turned under and so appear heaped up, while the ducts of the upper lobes slant downward. (Specimen prepared by Dr. D. D. Baker.)

had been washed out (fig. 6). Yet when this breast was amputated ten days afterward precisely the same type of foreign body reaction was noted as had been noted in the breasts in which lavage had not been prac-

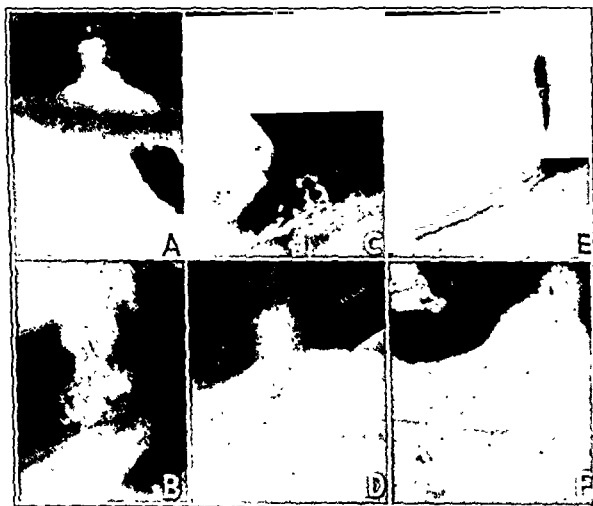


Fig. 7.—Studies of the breasts of a pregnant dog injected with various opaque substances seven days before delivery and after the animal had nursed the puppies for thirty days. A and B, colloidal thorium dioxide; C and D, iodized poppy-seed oil; E and F, chloriodized oil.

ticed. There was no reaction in the breasts that had been injected with iodized oil and chloriodized poppy-seed oil-Lilly and later emptied by lavage.

Even more convincing was the observation of an experimental animal the breasts of which were injected

measures, the x-ray examination was repeated. The shadows cast by the injected substances were less dense than on the first examination, it is true, but they were still perfectly definite (fig. 7), which seems to prove the impossibility of complete removal of the injected matter by milking or lavage.

In one of our clinical cases (6) repeated roentgenograms at the end of six months showed the colloidal thorium dioxide still present in the ducts, and the same phenomenon was noted in other cases observed for shorter periods. It is significant that in the case reported by Ries in 1930, which was the first reported instance both of mammography and of the reaction which may follow it, examination at the end of six months showed the iodized oil still in situ.

The use of opaque mediums as an aid in the diagnosis of diseases of the breast cannot, in our opinion, ever be anything more than a diagnostic aid. In the hands of men like Hicken and his associates, who have perfected themselves in the interpretation of the films taken by this method, it seems to be reliable, but its casual and occasional use is likely to be misleading and dangerous. That is clearly proved by the two cases in our own small series in which it failed to reveal a malignant growth which was present and which clinically was clearcut. We doubt, furthermore, whether even in expert hands the method will ever be sufficiently positive to warrant the omission of biopsy in any case in which the diagnosis is not so obvious that diagnostic section is clearly unnecessary.

The basis of the method lies in changes in the outline of the ducts, whether by extrinsic or by intrinsic pressure. But when a malignant tumor has begun to encroach on the ductal lumen the disease is likely to

be so far advanced that diagnostic aid is frequently not needed and mammography not indicated. The ductal system of the breast possesses no motility, for one thing, and for another it is very complicated (fig. 8). Large defects are not likely to be overlooked, but smaller defects, because of superimposed shadows, may be difficult or impossible to demonstrate. For this reason, if the method is relied on absolutely it may give rise to a totally unwarranted sense of security.

We have no wish at this time to prophesy what the ultimate usefulness of this method may be. We are not inclined to dismiss it, as Masson has done, with the statement that it is "merely another attempt at mechanical diagnosis." On the other hand, we do feel very strongly, in the light of our own experiences, that it is likely to give rise to false impressions and that its use is not justified until some opaque agent is discovered which is satisfactory from the radiologic standpoint and yet not irritating to the breast tissues. Such an agent is apparently not now available.

The outstanding feature of the study which we have conducted is that reactions occur from the injection of opaque mediums with far greater frequency than the literature would suggest. In our small series of twenty-five cases there were four reactions, three of which were very severe; in two cases (1 and 7) amputation would certainly have been required because of the reaction if it had not already been planned for other conditions. We have no doubt too that, if operation had been longer delayed in the other cases, more reactions would have been apparent; it is significant that the most marked reactions we observed occurred in the cases in which operation had been longest delayed. Furthermore, more than 50 per cent of our experimental injections were followed by reactions precisely similar to those which we had observed clinically.

Since it is impossible to predict in which cases reactions will occur, and since the method apparently adds little or nothing to what clinical observation can supply, we ourselves have discontinued its clinical use and we would advise those who are planning to employ it, before they accept it unreservedly, to check their results with such laboratory investigations as we have undertaken. Ries really summarized the whole matter when he wrote in reporting the reaction following the injection of iodized oil observed by him: "While the demonstration of the size and shape of the milk ducts by lipiodol was perfect, the sequelae would suggest considerable caution in the application of the procedure."

SUMMARY

1. Reports in the literature of the value of mammography and of the harmlessness of stabilized colloidal thorium dioxide under these circumstances led us to undertake its use in a personal investigation. The material includes twenty-five cases, twenty-three of which were surgical.

2. In thirteen of the twenty-three cases the mammographic diagnosis agreed with the clinical diagnosis and was later confirmed in the laboratory. In other cases, however, the diagnosis was either not clear or actually incorrect; the most serious of these errors occurred in cases of malignant conditions which were evident clinically but which were not revealed by x-ray examination after injection of an opaque agent.

3. In four of the twenty-five clinical cases the injection of iodized oil or of colloidal thorium dioxide gave rise to foreign body reactions, three of which were very severe; in two of these three cases amputation would have been necessary because of the reaction if it had

not already been planned for another condition. Only three similar cases, all by different authors, have been reported in the literature.

4. An experimental study resulted in more than 50 per cent of foreign body reactions, all of which were similar to the reactions noted in clinical cases. The various agents used experimentally, all of which were satisfactory from the radiologic standpoint, were sometimes followed by reactions. Lavage of the breast after injection did not prevent the reaction in all cases, nor did the physiologic lavage brought about by the act of nursing.

5. We do not feel that the method, as it is now employed, contributes diagnostic aid of sufficient value to warrant the risks of the serious reactions that may follow it. Until an agent is discovered which is non-irritating to the breast tissues and which is at the same time satisfactory from the radiologic aspect, we do not advise the use of mammography by means of contrast mediums.

MULTIPLE PERIPHERAL NEUROPATHY VERSUS MULTIPLE NEURITIS

I. S. WECHSLER, M.D.

NEW YORK

In his "Classic Description of Disease,"¹ Ralph Major quotes a Greek poet of the second century B. C., named Nikander, who described as the harmful *cerusa* what seems to have been lead palsy. It is quite probable, as Singer pointed out, that Hippocrates was the first to give a clinical description² of diphtheritic paralysis, although he was obviously unaware of the concept. Actually it was not until 1616 that François Citois of Poitiers recognizably described lead colic with peripheral paralysis. In a paper published in 1772, though written five years earlier, Sir George Baker³ practically demonstrated that Devonshire colic was due to lead. Jacob Botins wrote of beriberi in 1642, evidently a posthumous paper, as he died in 1631, and Nicholas Tulip described beriberi *indorum* in 1716.

Gaspar Casal recognized pellagra in 1735, though his paper was not published until 1762. It was John Coakley Lettsom,⁴ however, who originally described alcoholic multiple neuritis. James Jackson⁵ of Boston reported cases of alcoholic polyneuritis from the Massachusetts General Hospital under the title of "arthrodynia à potu," as early as 1822. So far there were merely clinical descriptions, and it was as late as 1864 that Dumenil⁶ reported on the pathologic examination of peripheral nerves in cases of multiple neuritis. The pathologic studies of Lancereaux (1871), Gombault (1873) and Joffroy (1879)⁷ finally led to the establishment of the whole concept.

From this meager historical sketch it is evident that clinical descriptions of multiple neuritis are very old, and even the concept itself is now venerable. Indeed it has come to be accepted almost as an axiom which

1. Major, Ralph: *Classic Description of Disease*, Springfield, Ill., Charles C. Thomas, Publisher, 1932.

2. Wechsler, I. S.: *Introduction to the History of Neurology: Text-book of Clinical Neurology*, Philadelphia, W. B. Saunders Company, 1935, p. 771.

3. Baker, Sir George: *Medical Transactions, College of Physicians, London*, 1772.

4. Lettsom, J. C.: *Some Remarks on Lignum Quassiae Amaræ*, *Mem. Med. Soc.*, London 1: 128, 1787.

5. Jackson, James, cited by Viets, H. R.: *History of Peripheral Neuritis*, *Arch. Neurol. & Psychiat.* 32: 575 (Aug.) 1935.

6. Dumenil, Louis: *Paralysie périphérique du mouvement et du sentiment portant sur les quatre membres*, *Gaz. hebdom. de méd.* 1: 203, 1864.

7. Cited by Gros, J.: *Contribution à l'histoire de névrites*, *Thèse de Paris*, J. B. Baillière et fils, 1879.

is not to be questioned; so that it would appear rather presumptuous to inquire into its validity. None the less a number of doubts have arisen in recent years to warrant reexamination of the whole subject. 'It

tiple neuritis be retained only in the rare instances in which there is demonstrable inflammation of nerves.

Before validating the conclusions and justifying the change of concepts, it may be of interest to recall how the question came to be raised. At first general doubts arose as to the true cause in cases of polyneuritis or multiple neuritis of obscure origin; that is, in the not infrequent instances in which a specific causative factor could not be found despite diligent search. In such cases recourse was generally had to the words toxic or infectious. What was specifically toxic or infectious, when neither condition was demonstrable, was never stated. It was pointed out, therefore, that the glib tendency hitherto indulged in to invoke those explanations was highly unsatisfactory and that the "nonspecific" use of either term merely served to cover ignorance and really explained nothing at all.⁹ Based on clinical evidence and theoretical considerations, the conclusion was reached that in those obscure cases in which



Fig. 1.—Sciatic nerve from a patient with carcinoma of the stomach, showing neuropathy due to avitaminosis. Note the degeneration of the myelin sheath. (From the Department of Neuropathology, the Montefiore Hospital.)

seems to me that the evidence which has gradually and almost imperceptibly accumulated not only confirms those doubts but raises anew the question whether in the majority of cases of what is commonly known as multiple neuritis the concept is at all true. As a matter of fact there is much clinical and experimental evidence to show that what passes for neuritis is not an inflammatory process, and, so far as this is true, the term multiple neuritis is not only erroneous but misleading as well. It may also be stated with assurance that the pathologic changes demonstrated in most of the cases hitherto regarded as inflammatory are actually degenerative.

It becomes necessary, therefore, not only to discard what should now be recognized as a misnomer but to revise practically the whole subject of multiple neuritis. Not that there are not cases in which there is inflammation of peripheral nerves, that is, true multiple neuritis; but these form a group by themselves and a comparatively small one at that. I have therefore suggested⁸ that the designation multiple neuropathy be adopted and used in the vast majority of cases in which degeneration of peripheral nerves is the underlying pathologic change and the old term mul-

none of the various factors hitherto regarded as the causes of multiple neuritis could be found, the condition was due to food deficiency. From the clinical

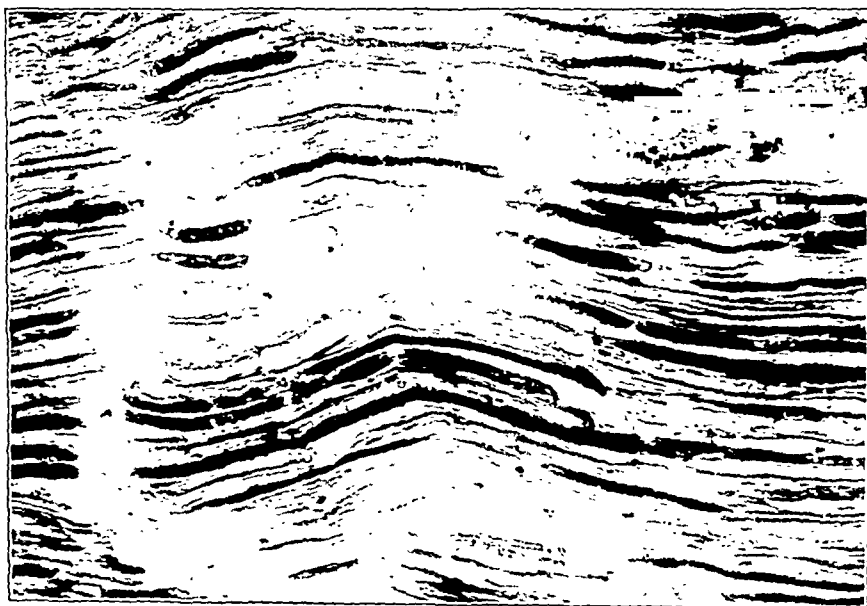


Fig. 2.—Median nerve showing diabetic neuropathy, with destruction of the myelin sheath and the axis cylinders. (From the Department of Neuropathology, the Montefiore Hospital.)

point of view the condition could not be classified either as beriberi or pellagra, although these two diseases were naturally suspected. Indeed, Shattuck¹⁰ had previously suggested the relation of beriberi

8. Wechsler, I. S.: Multiple Neuritis, in Oxford Medicine, Oxford University Press, 1926, vol. 6, p. 647.

9. Wechsler, I. S.: Unrecognized Cases of Deficiency of Polyneuritis (Avidaminosis?) *M. J. & Rec.* 131: 441 (May) 1930.

10. Shattuck, G. C.: The Relation of Beriberi to Polyneuritis, *Am. J. Trop. Med.* 8: 539, 1928.

to polyneuritis, without however, describing case material.¹¹

Further observation and more extensive study¹² led to the question of whether, even in cases in which alcohol, arsenic or diabetes is presumed to cause neuritis, a deficiency factor is not the ultimate cause. Finally, experimental work on monkeys intoxicated with alcohol and deprived of vitamins¹³ gave further proof of the two contentions; namely, that what passes for neuritis is a neuropathy and that what passes for an ultimate cause, in this case alcohol, is but one factor, with avitaminosis another in the causation of "multiple neuritis." Subsequently Minot, Strauss and Cobb¹⁴ then Strauss¹⁵ and, more recently, Jolliffe, Colbert and Joffe¹⁶ brought almost absolute proof of the relationship of avitaminosis to alcoholic polyneuritis. The formula worked out by Cowgill,¹⁷ that is, the vitamin-caloric ratio, furnished a more precise and scientific basis for the study of the whole subject.

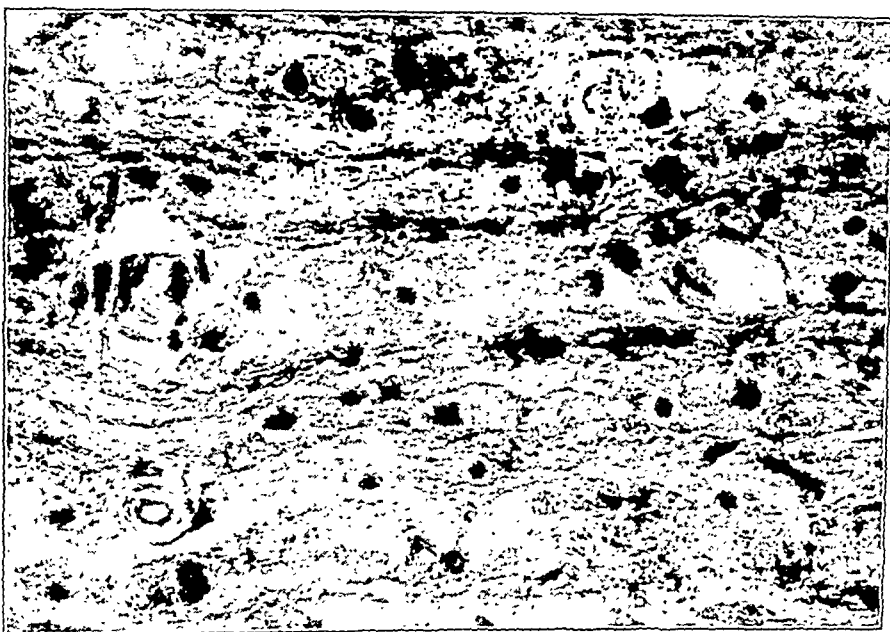


Fig. 3.—Sciatic nerve from a patient with multiple "neuritis." The neuropathy was of undetermined origin. (From the Department of Neuropathology, the Montefiore Hospital.)

As to pathology, one could justly conclude on theoretical grounds alone that the changes in "neuritis" from the effects of alcohol, lead, carbon monoxide or diabetes, for instance, are not inflammatory in nature. To begin with, the neuron, and indeed all nerve tissue, being ectodermal in origin, does not easily react with an inflammatory reaction (except in poliomyelitis and some forms of encephalitis). Mesodermal structures, that is, connective tissue and blood vessels, do so react. It is the coverings of the brain and spinal cord and of the peripheral nerves that show inflammatory reactions. The nerve fibers show degeneration. Secondly, it is not likely that a substance which causes

degenerative destruction of the brain or spinal cord will bring about inflammation of the peripheral nerves if it happens to affect them. It is known, for instance, that alcohol causes encephalopathy, and so does lead. Neither causes encephalitis. What passes for alcoholic polioencephalitis is not an encephalitis at all but an encephalopathy. The diphtheria toxin, like other specific toxins, causes degeneration and not inflammation of nerves.

Aside from theoretical consideration, however, it is necessary merely to examine photomicrographs of the pathologic processes of "multiple neuritis" (figs. 1, 2 and 3). They show destruction of myelin, fragmentation of axis cylinders and no round cell infiltration or inflammatory changes of an exudative nature. If the nerve cell is affected in the same process, there is no cloudy swelling and no neuronophagia, but just disappearance of the body and nucleus. In short, one sees only the changes of true degeneration. Carmichael and Stern,¹⁸ Sir Frederick Mott,¹⁹ Hassin,²⁰ Winkelman,²¹ Orton and Bender²² and others have amply proved this. It is of interest that the pathologic changes observed in most cases of "neuritis" are precisely the same as those associated with poisoning by heavy metals and vitamin deficiency. In the latter conditions there never is any question of inflammation. The fact is that the old descriptions of "neuritis" date to the days when histologic methods were less refined and the concepts less precisely defined.

Still other evidence points to the validity of the concept of neuropathy as against that of neuritis. If it is true that in many cases of so-called multiple neuritis there is food privation and therefore avitaminosis, there is every reason to expect a degenerative process, such as is seen, for instance, in spinal cord and root lesions of pernicious anemia. Such a process is precisely what occurs; the peripheral nerves, however, are more selectively its seat, although the spinal cord does not escape in many cases of peripheral neuropathy. Indeed in some instances, particularly of poisoning by alcohol, lead or carbon monoxide, the brain too suffers. It may be repeated once more that in these cases one is dealing with an encephalopathy and not an encephalitis. It is also of interest that in practically all of the cases of so-called multiple neuritis in which I had occasion to examine the gastric contents there were absence of free hydrochloric acid and either complete absence or marked reduction of the total acidity. In cases of what is known as pregnancy polyneuritis, not only is there invariably a history of persistent vomiting and hence starvation but, in many cases, there is an

11. I must confess that I had not read the paper by Shattuck until I came to write my paper¹² in 1932.

12. Wechsler, I. S.: Etiology of Polyneuritis, Arch. Neurol. & Psychiat. 29: 813 (April) 1933.

13. Wechsler, I. S.; Jervis, G. A., and Potts, H. D.: Experimental Study of Alcoholism and Vitamin B Deficiency in Monkeys, Bull. Neurol. Inst., New York 5: 453 (Aug.) 1936.

14. Minot, G. R.; Strauss, M. B., and Cobb, Stanley: Alcoholic Polyneuritis, New England J. Med. 208: 1244 (June 15) 1933.

15. Strauss, M. B.: The Etiology of Alcoholic Polyneuritis, Am. J. M. Sc. 189: 378 (March) 1935.

16. Jolliffe, Norman; Colbert, C. M., and Joffe, P. M.: Observations on the Etiologic Relationship of Vitamin B to Polyneuritis in the Alcohol Addict, Am. J. M. Sc. 191: 515 (April) 1936.

17. Cowgill, G. R.: The Vitamin B Requirement of Man, New Haven, Conn., Yale University Press, 1934.

18. Carmichael, A. A., and Stern, R. O.: Korsakoff's Syndrome, Brain 54: 189 (June) 1931.

19. Mott, Frederick W.: The Nervous System in Chronic Alcoholism, Brit. M. J. 2: 1403 (Nov.) 1910.

20. Hassin, G. B.: Lesions Produced by Lead, Arch. Neurol. & Psychiat. 6: 268 (Sept.) 1921.

21. Winkelman, N.: Ztschr. f. d. ges. Neurol. u. Psychiat. 102: 35. 1926.

22. Orton, S. T., and Bender, Lauretta: Lesions in Lateral Horns in Acrodynia, Pellagra and Pernicious Anemia, Bull. Neurol. Inst., New York 1: 507 (Nov.) 1931.

encephalopathy which manifests itself as an organic psychosis of the Korsakoff type. The conclusion is justified that the same degenerative process in the brain affects the peripheral nerves and leads to multiple neuropathy.

The acceptance of the term multiple neuropathy will merely round out terminology and make it conform with the accepted terminology as it applies to the brain and spinal cord. Just as the term encephalopathy is used for degenerative changes in the brain, whether toxic or vascular, and the term encephalitis is reserved for inflammation of the brain, and just as the concept of myelopathy has been accepted for degenerative lesions of the spinal cord and the term myelitis has been limited to inflammatory changes within the cord, so multiple neuropathy could be used for degenerative changes in the peripheral nerves, the old term polyneuritis being restricted to those much rarer conditions in which there is actual inflammation of nerves. (The term neuronitis, which has been suggested, is unacceptable for the same reasons that neuritis is, and the word neuronopathy, which is possibly more correct etymologically, is rather cumbersome and not quite euphonious.)

That there are cases of multiple neuritis on the basis of inflammation admits, of course, of no doubt. But there is always clinical evidence of infection in those cases. They are often characterized by fever and its concomitants. The spinal fluid is apt to show signs of inflammation, namely, an increase of globulin, protein and cells. The disease syndrome runs a more rapid, often a more severe and not infrequently a fatal course. Involvement of the cerebral nerves, especially of the facial nerves on both sides, points to cerebral and meningeal disease. Finally, the inflammation is possibly related to virus diseases and may accompany influenza and the exanthems. But, what is perhaps more important, certain cases of epidemic encephalitis are actually characterized by syndromes of multiple neuritis.

My suggestion therefore is that the terms alcoholic multiple neuropathy, lead neuropathy, diphtheritic neuropathy and so on be used henceforth. This is not mere caviling at words. The change in nomenclature is important because it embodies a different concept and fits an actual pathologic condition. Even scientific tradition does not justify the perpetuation of a misnomer. The newer concept is valuable and important because it serves as a guide to treatment, both preventive and curative. It is obvious that the treatment of degenerative diseases differs from that of inflammatory states. One does not have to seek for nonexistent sources or foci of infection and extract teeth or tonsils, for example. More emphasis, in addition to the removal of sources of foreign noxious substances, can be put on dietary treatments. When, in the future, more knowledge is accumulated as to selective affinity and nerve specificity of vitamins, logic will be better served if the fact is borne in mind that the condition is a neuropathy and not a neuritis.

CONCLUSIONS

1. The whole concept of multiple neuritis is in need of revision, and the very term as used in most of the cases now so designated is a misnomer.

2. In the vast majority of cases, whether the condition is due to a toxin, foreign poison or avitaminosis, there is a degenerative and not an inflammatory process.

3. It is suggested that the term multiple neuropathy, polyneuropathy or peripheral neuropathy be substituted for multiple neuritis in those cases in which both the cause and the pathologic changes point to a degenerative process, and that the designation neuritis be retained only in those cases in which there is adequate causation and in which an inflammatory condition is recognized as well as demonstrable.

4. The nomenclature will then conform to that now employed in the case of the brain and spinal cord, namely neuropathy, encephalopathy and myelopathy.

70 East Eighty-Third Street.

Clinical Notes, Suggestions and New Instruments

BISEPTATE UTERUS

ADENOCARCINOMA IN ONE UTERINE CAVITY AND A PEDUNCULATED POLYP IN THE OTHER

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St. Luke's Hospital

Neither biseptate uterus nor adenocarcinoma of the body of the uterus is particularly rare, but a combination of these two conditions together with a pedunculated polyp in the other uterine cavity is a sufficiently unusual condition to justify its being reported. Another reason for reporting this case is to emphasize the necessity for a thorough exploration of the uterine cavity in women who bleed after the menopause, even though the first curettings should reveal a uterine polyp.

REPORT OF CASE

History.—A woman, aged 58, a housewife, seen in the office Nov. 11, 1936, gave a history of having passed through a normal menopause with cessation of menstruation five years previously. Six months before the time of her examination she had first

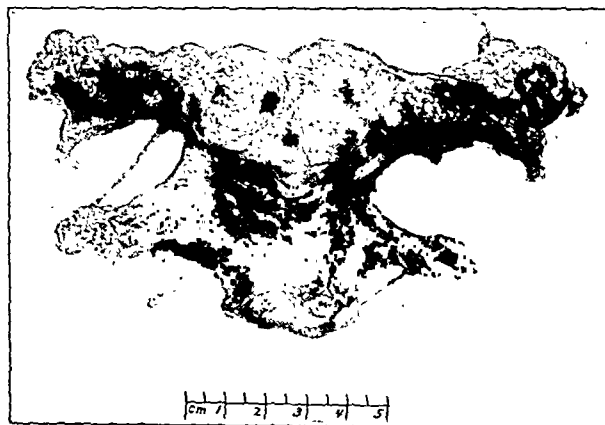


Fig. 1.—The uterus as it appeared from the outside. The depression at the fundus can be seen. The tubes, ovaries and broad ligaments are not remarkable.

noticed a slight watery vaginal discharge. Four months later this became more profuse, and for the last six weeks it had been definitely bloody. At no time had there been any pain or other symptoms. She had not lost weight. She had never been pregnant.

The patient was in excellent physical condition. Examination was entirely negative except for the bloody vaginal discharge, which was found to be coming from the uterus. Pelvic examination showed the uterus normal in size and position. There was no tenderness nor were there palpable masses in either fornix.

From the Surgical Service, St. Luke's Hospital.

November 12, with the use of cyclopropane and ether anesthesia, the cervix was dilated and some rather large pieces of tissue were removed from the uterine cavity with a sharp curet. Frozen sections showed this to be an adenocarcinoma of the body of the uterus. A lower midline incision was then made. A panhysterectomy, bilateral salpingo-oophorectomy and complete removal of the broad ligaments and the adjacent gland-bearing areas were done. Closure was made in layers without drainage after complete peritonealization had been carried out.

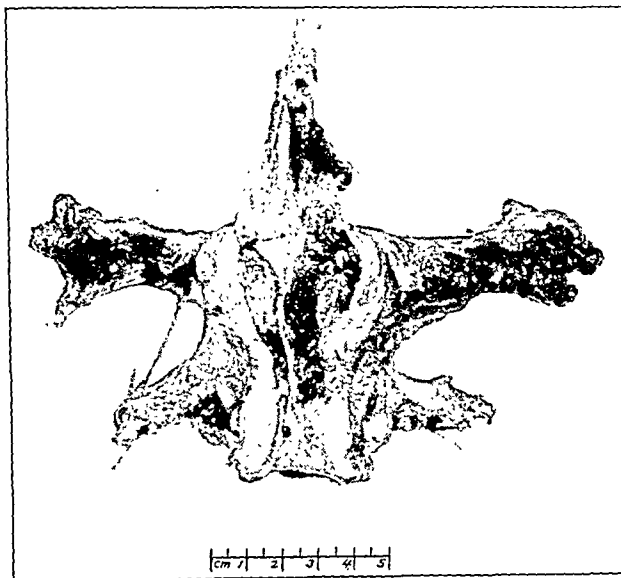


Fig. 2.—The appearance of the uterus when it was opened. The fibrous septum divides the uterine cavity into two parts as far down as the internal os. In the right side is a pedunculated polyp which was 3 cm. long. In the left side is a fungating tumor which on section proved to be an adenocarcinoma of the body.

Convalescence was uneventful. She was discharged from the hospital on the eighteenth postoperative day with a firm, well healed scar.

Pathologic Examination.—The specimen consisted of uterine curettings, the uterus with the cervix, both tubes and ovaries and the broad ligaments.

There were several pieces of curetted tissue, which was friable and a reddish gray. The uterus measured 7 by 7 by 3 cm. There was a definite depression at the fundus. When it was opened a fibrous septum was seen to divide the uterine cavity into two compartments, as far as the internal os. In the right side was a pedunculated polyp measuring 3 by 1 by 1 cm. On the left side was a fungating tumor which completely filled the cavity. The cervix appeared grossly normal. Both tubes and ovaries appeared grossly normal. In the left broad ligament was a firm white nodule 0.5 cm. in diameter.

Microscopic examination of the fungating tumor and curettings showed a papillary growth, much of which was adenomatous, but other portions had become more anaplastic and irregular; the nuclei were large and hyperchromatic, and the glands showed atypical branching, so that the mass could only be considered already malignant. The attachments of this tumor showed it invading the uterine muscle rather superficially but with well developed glandular acini and a more papillary structure. The uterine muscle beyond this was relatively normal.

The left ovary was fibrous and atrophic.

The right ovary contained numerous glandular rests with low columnar, relatively undifferentiated lining cells. Some of these were small, while others were larger and were cystic. They did not differ from those often seen in the ovary, except in their number.

The tubes showed small central lumens with atrophic mucosa.

The nodule from the left broad ligament showed a small central cavity lined with undifferentiated low columnar epithelial cells and surrounded by bundles of smooth muscle. This might represent the canal of Nuck.

The diagnosis was biseptate uterus; adenocarcinoma of the uterine cavity, on the left; pedunculated polyp of the uterine cavity, on the right; atrophic tubes and ovaries.

Follow-Up.—When last seen one year after the operation the patient was symptom free, and pelvic examination was negative except for the absence of the cervix.

COMMENT

In a case of biseptate uterus, an adenocarcinoma of the body of the uterus was found in the left cavity and a pedunculated polyp in the right. At the time the diagnostic curettage was done, had the curet gone into the right cavity instead of the left the uterine polyp would have been removed and might well have been considered to be the sole cause of the bleeding. Had this happened, the opportunity for early removal of the adenocarcinoma of the uterus might have been lost, unless there was considerable continued bleeding after discharge from the hospital. When the pieces of adenocarcinoma were obtained with the curet, no additional curetting was done. Had the polyp been removed first, of course, a thorough curettage would have followed. But it is possible to see how the curet might have gone into only one cavity of the uterus.

182 East Seventy-Ninth Street.

CAVERNOUS HEMANGIOMAS OF THE LUNG WITH SECONDARY POLYCYTHEMIA

C. B. RODES, M.D., BUTTE, MONT.

A recent review of the literature on hemangioma of the lung has impressed me sufficiently to indicate that the report of such an observed case complicated by secondary polycythemia is warranted; more so because a record of such a complication as hemangioma of the lung in any type of polycythemia could not be found. Several reports, however, of malignant types of hemangiomas of the lung and pleura were found, as well as those of both benign and malignant lesions of other viscera.

De Lange and de Vries Robles¹ and Bowers² reported cases of the benign type in the lungs of infants. To further the interest, Hirsch³ recently published an article on pulmonary changes in polycythemia vera.

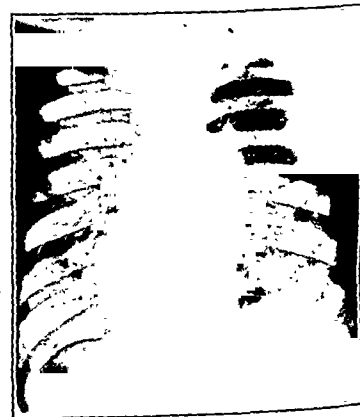
Roentgenograms taken in the case here reported showed shadows similar to those demonstrated in Hirsch's cases. He consented to compare the roentgenograms taken in this case with those taken in his reported cases, stating "I find the nodules, particularly those of the left lung, similar in appearance to those I have described."

REPORT OF CASE

B. C., a white man, aged 25, an American, was first seen by me Dec. 10, 1935.

The family history was as follows: The father died at the age of 50 of cancer of the sigmoid and colon. The mother and one brother are living and well. One sister died in infancy.

The patient had had measles, mumps, whooping cough, chickenpox, smallpox and tonsillitis. He had a tonsillectomy



Appearance of chest showing shadow of nodules in middle portion of lower lobe of left lung.

1. de Lange, C. and de Vries Robles, S. B.: *Anziona of Lung in Infant*, *Zschr. f. Kinderh.* 24: 394-399 (Jan.) 1923.
2. Bowers, W. E.: *Rupture of Visceral Hemangioma as Cause of Death*, *Nebraska M. J.* 21: 55 (Feb.) 1936.
3. Hirsch, I. S.: *Pulmonary Changes in Polycythemia Vera*, *Radiology* 26: 469-473 (April) 1936.

when he was 10. There was some shortness of breath as long as could be remembered. The lips and hands were always bluish. Slight clubbing of the fingers was noticed at about the age of 15 and of the toes two years before admission. He had epileptiform seizures, six in all, during the age period of 16 years and gonorrhea one year before the present trouble.

The present complaint started about one month before I saw him. At that time he noticed that the urine was dark and that the skin and whites of the eyes seemed slightly yellow. He consulted his family physician, who suggested that the liver or kidneys were not functioning. There was no pain. He thought that he was getting somewhat shorter of breath and that the lips and finger nails were more purplish.

On physical examination the patient was fairly well developed and nourished. He was 6 feet (183 cm.) tall and weighed 150 pounds (68 Kg.) nude. The lips were dark, almost purplish, with several very small bluish spots on each having the appearance of hemangiomas. The head, face and neck were normal. The heart was not enlarged; there were no murmurs. The lungs were apparently clear. Examination of the abdomen was negative on palpation. There was marked clubbing of the tips of the fingers and toes. Neurologic examination revealed normal reflexes; motor and sensory studies were essentially negative throughout. The pulse rate of both radial arteries was 80. The blood pressure in both arms was 130 systolic, 75 diastolic.

The blood count December 12 was hemoglobin 118 per cent, red blood cells 7,540,000, white blood cells 9,800, neutrophils 52 per cent and lymphocytes 48 per cent. The urine was clear, straw colored and acid, with a specific gravity of 1.021, albumin 0, sugar 0, red blood cells 0 and white blood cells 0.

A roentgenogram taken at this time is here reproduced.

The patient returned December 27 for a recheck. Physical examination showed no changes. The blood count was hemoglobin 108 per cent, red blood cells 7,180,000, white blood cells 10,700, neutrophils 62 per cent, lymphocytes 38 per cent. Roentgenograms corresponded to those previously taken.

The history given by the mother post mortem revealed that the patient never felt better in his life when on Thursday, May 20, 1936, at 5 p. m., he was suddenly seized by severe pain below the sternum and in the upper part of the abdomen, followed immediately by hemorrhage from the lungs. She was unable to estimate the quantity of blood but said that there was a considerable amount. He recovered nicely following this hemorrhage. Again on Sunday, May 24, at about the same hour, he coughed up another slight quantity of bright blood. The following Tuesday night at 10:15, after having eaten a heavy meal and taken an automobile ride, he was stricken by a sudden fatal hemorrhage, death being almost immediate.

AUTOPSY

The body was well developed. There was marked clubbing of the tips of the fingers and moderate clubbing of the toes.

The body was embalmed through the right inguinal vessels and there were abdominal trocar punctures.

Nothing unusual was found in the abdominal cavity, the organs being of normal size, weight and appearance. The thoracic and pleural cavities were normal except for bloody fluid apparently introduced by the embalming trocar. The thoracic viscera were removed in toto for examination.

The heart measured 12 cm. transversely and 10 cm. vertically and lay normally in the pericardial sac. It weighed 350 Gm. The musculature was of normal thickness and appearance. The coronary arteries were patent. The mitral valve was moderately thickened and slightly roughened but the other valves were grossly normal. The root of the aorta showed a few yellow atheromatous plaques but was neither dilated nor distorted.

The bronchi were opened from the posterior aspect. The left bronchus showed a moderate amount and the right was completely filled with clotted blood. The lower anterior margin of the right lung showed a dark blue saccular mass 2 cm. in diameter. A similar mass, 6 cm. in diameter, was found in the posterior portion of the right median lobe. There was a similar mass measuring 6 by 3 by 2 cm. in the midportion of the upper lobe of the left lung. On section these masses were

filled with blood and were multilocular, the lining being smooth and thin. Rupture into the bronchi was not found.

The posterior and inferior portions of the lung were diffusely congested with dark hemorrhagic and slightly foamy fluid. Microscopically the masses in the lung showed endothelium-lined cavities filled with blood. Nothing notable was found in the microscopic sections of the other organs.

The diagnosis was multiple hemangioma of the lung, with rupture into the bronchus.

Motor Clinic Building.

GLAUCOMA

PRELIMINARY REPORT OF AN OPERATIVE PROCEDURE

OTTO BARKAN, M.D., SAN FRANCISCO

The following is the preliminary report of a surgical procedure for primary chronic glaucoma of the shallow chamber type:

According to recent microgonioscopic and surgical investigations¹ primary glaucoma may, with few exceptions, be divided into two main anatomic types according to the mechanical cause of the increased intra-ocular pressure. One type is characterized by normal or deep chamber and open iridic angle. In this the increased pressure is caused by blockage of the sclerocorneal trabeculum, and a rational operation, "goniotomy," has been suggested for its relief.² The second type is characterized by a shallow chamber and is produced by obstruction of the filtration angle by the root of the iris. An operative procedure for its relief is presented herewith. This procedure may be employed as an early or prophylactic operation or it may be employed, with safety and without complicating sequelae, for the relief of those cases in which there is a high degree of intra-ocular tension and which threaten to run a malignant course.

The object of the procedure is to reduce increased intra-ocular pressure in a rational and safe manner by means of correcting the mechanical obstruction which is the causal factor. It consists of performing one or more excisions of the root of the iris in such manner that the anterior chamber is maintained and post-operative adhesions of the iris in the angle are prevented. The technic combines (1) preliminary aspiration of vitreous, (2) deepening of the anterior chamber by means of injection of physiologic solution of sodium chloride before, during and immediately after the operation, (3) making one or more successive oblique valvelike keratome incisions within the corneal tissue near the limbus and (4) excision of one or several pieces of the root of the iris.

The purpose of the operation is to reduce and prevent increased intra-ocular pressure in the shallow chamber (narrow angle) type of glaucoma.

Postoperative examination of the iridic angle reveals the result of the procedure to be equalization of pressure in front of and behind the iris, posterior displacement of the diaphragm of the iris within the region of operation, deepening of the chamber with widening of the angle and subsequent increased access of aqueous to the filtration angle.

The procedure appears to solve the technical difficulties and avoids the dangers commonly associated with operations in this type of glaucoma. It restores and maintains the physiologic direction of outflow of aqueous. There is no appreciable refractive error produced and there is no cosmetic disfigurement. The sphincter of the pupil is preserved. It avoids the danger of running a malignant course. It would appear to be free from the dangers of present day operations, such as iritis, late infection, cataract formation and other disturbing sequelae and complications. Judging from studies made in ten operative cases to date, the operation gives promise of answering adequately two great needs of glaucoma surgery in the shallow chamber type: (1) early safe operation and (2) prevention of a malignant course.

490 Post Street.

This procedure will be published in full in the Transactions of the American Medical Association after demonstration 16, 1938.

1. Barkan, O. in the Surgery of Chronic Glaucoma, Am. J. Ophth., 20: 1237 (Dec.) 1937.
2. Barkan, Otto: A New Operation for Chronic Glaucoma, Am. J. Ophth., 19: 951 (Nov.) 1936.

Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.

CHICAGO

NOTE.—In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The articles will be continued from time to time in these columns. When completed, the series will be published in book form.—Ed.

THE THERAPY OF GOITER AND OF HYPERTHYROIDISM

IN COLLABORATION WITH LINDON SEED, M.D.

The diagnostic characteristics of thyroid enlargement are that it follows the movements of deglutition and coughing. These are absent when the size of the mass is excessive or when there are adhesions.

It is important for therapy to distinguish between true goiter and (a) thyroid congestion, (b) inflammation or (c) a malignant condition.

(a) Thyroid congestion causes a moderate periodic, symmetric, smooth, painless enlargement of the gland during periods of stress, such as menstruation or pregnancy. It needs no treatment.

(b) Thyroid inflammation and acute suppurative thyroiditis are exceedingly uncommon. They set in suddenly after injury or during an infectious disease and have associated the signs of inflammation. The gland is hard and tender and there may be chills and fever, dyspnea, dysphagia and radiating pains. Abscesses may develop, which, when well localized, demand surgical drainage. Chronic woody thyroiditis, ligneous thyroiditis (Riedel's struma, Hashimoto's tumor) is somewhat more common. It may begin with tenderness over the thyroid, a slight fever and mild symptoms of hyperthyroidism. The thyroid is diffusely enlarged as a stony hard mass, moderately tender. In advanced stages a granulomatous infiltration may occur into the surrounding structures. It is difficult to distinguish from carcinoma. On microscopic examination there is a diffuse fibrous proliferation, wide destruction of acini, and round cell and even giant cell infiltration. In some cases resolution sets in, often leaving a thyroid deficiency. A subtotal thyroidectomy effects a cure but is likewise often followed by myxedema.

(c) Malignant goiter, usually carcinoma, is a stony hard, nodular, irregular swelling of the gland, usually first appearing in a patient over 35 years of age, which is very prone to produce pain, pressure symptoms, cachexia and metastases (especially to the lungs, skull, brain and bones). Early diagnosis and radical operation combined with x-rays or radium are the only hope.

True goiter must be differentiated from a therapeutic standpoint into four forms: nontoxic diffuse goiter, nontoxic nodular goiter, toxic nodular goiter and toxic diffuse goiter.

NONTOXIC DIFFUSE GOITER (SIMPLE, COLLOID GOITER)

Diagnosis.—A smooth, soft, symmetric enlargement in the lower part of the neck which rises on swallowing may be best examined by placing the fingers behind

the sternomastoid, the thumb over the isthmus, and asking the patient to swallow. Distress in the neck and pressure symptoms are uncommon. There is no pain on gentle manipulation, and generally no thrill or bruit, excepting possibly temporarily during menstruation or pregnancy. There are no constitutional symptoms. The basal metabolic rate is normal. In the large ones there may be evidence of hypothyroidism, i. e., bradycardia (from 62 to 40 beats per minute), intolerance to cold, disturbances in growth and menstruation, and a lowered basal metabolic rate. It usually appears in this country in girls at puberty as a small soft diffuse enlargement without symptoms. The majority of these disappear before 20, but some continue to enlarge and, as the years pass, develop into nodular goiters or may suddenly become toxic diffuse goiter.

Therapy.—Prophylaxis: In endemic areas, community use of iodized salt is best (1 mg. of iodide per kilogram of salt) or else a dose of 5 mg. of iodide once a week should be given, especially to girls between 11 and 16 years of age and during pregnancy. Sea food (from the sea but not from inland waters) is rich in iodine and is of prophylactic value. Much larger dosage of iodide may induce hyperthyroidism in those predisposed to it.

PRESCRIPTION 1.—Mild Iodide Medication

R Solution of potassium iodide..... 15.00 cc.
Three drops once daily for ten days, every six months in young children. In older children and adolescents slightly larger doses (from 4 to 5 drops) twice weekly.

PRESCRIPTION 2.—Mild Iodide Medication

R Syrup of hydriodic acid..... 15.00 cc.
Syrup of cherry..... to make 60.00 cc.
Teaspoonful in water once daily for two weeks, every three to six months.

PRESCRIPTION 3.—Mild Iodide Medication

R Syrup of ferrous iodide..... 60.00 cc.
Fifteen drops in water three times daily after meals.

PRESCRIPTION 4.—Thyroid

R 50 tablets of thyroid, each..... 0.06 Gm.
Once daily, the effect being carefully watched.

Treatment: (a) In endemic diffuse goiter the solution of potassium iodide (prescription 1) may be given in doses of five drops in milk twice a week or else the pleasant method of mild iodide administration be employed (prescriptions 2 and 3). (b) If small quantities of iodide continued for several months do not produce improvement, the administration of thyroid (prescription 4) is indicated. If no improvement occurs there is little else that can be done short of surgical removal. (c) In the sporadic form of long standing it is not safe to give iodide, as many of these goiters have adenomas hidden within them. They are best treated as though they were adenomatous goiter.

NONTOXIC NODULAR GOITER (THYROID ADENOMA WITHOUT HYPERTHYROIDISM)

Diagnosis.—This form is characterized by nodules appearing in the thyroid, causing asymmetric unsightly enlargement of the gland. Though nontoxic, it may become toxic at any time. Frequent basal metabolic tests may predict thyrotoxicosis even before symptoms are fully developed. If it grows outward in the neck, pressure symptoms are unlikely but the deformity is objectionable. Pressure symptoms occur if a nodule in one or both lobes becomes lodged behind the sternum or clavicle. Difficulty in breathing with an inspiratory

stridor is the chief symptom. The veins of the neck are distended; the appearance of hoarseness, recurrent laryngeal nerve paralysis and pain are indications of malignancy. Uncommonly the tumor is entirely intrathoracic and roentgenograms taken anteroposteriorly and laterally may be required to show the displacement and narrowing of the trachea.

Therapy.—Iodine must not be used; although it may diminish the size of the goiter, it never brings about a complete disappearance and may induce thyrotoxicosis, especially in patients past 50. Partial thyroidectomy is the only treatment. It is demanded when pressure symptoms occur or the tumor becomes unsightly. Indeed it is best to remove surgically all asymptomatic nodular goiters in persons past 40 years of age, for prophylaxis against hyperthyroidism or malignancy.

TOXIC NODULAR GOITER (THYROID ADENOMA WITH HYPERTHYROIDISM, PLUMMER'S DISEASE)

Diagnosis.—There is the usual history of a long latent period (from ten to twenty years) of nontoxic nodular goiter. Hence it is rare in persons under 25 years of age. Symptoms appear as an average at the age of 45 years. The onset is insidious and the course steadily progressive. Remissions and exacerbations are uncommon. Nervous phenomena are not marked. There are no crises. Circulation embarrassment may be the first complaint. There is an asymmetric enlargement of the thyroid without bruit or thrill. The mass may be intrathoracic and require roentgenographic demonstration. The symptoms of hyperthyroidism are present with the exception of the eye signs.

Therapy.—Iodide is contraindicated. Radiation therapy is unsatisfactory. Surgical removal of the adenoma usually gives prompt and permanent relief.

TOXIC DIFFUSE EXOPHTHALMIC GOITER (GRAVES' DISEASE, BASEDOW'S DISEASE, HYPERTHYROIDISM)

Diagnosis.—There is a history of goiter for a short time, rarely over a year. It is more common in young adults, very rare in children. The onset is rather acute and there is a tendency to remissions, exacerbations and crises. The following are the six cardinal symptom groups of exophthalmic goiter and of hyperthyroidism:

1. The thyroid enlargement is diffuse and has a firm, rather hard consistency. A bruit at the superior pole is present in 50 per cent of cases and is pathognomonic of toxicity. In 5 per cent of cases there is no palpable enlargement. It may be concealed. One must be on the lookout for "larval" or "masked" cases of hyperthyroidism, occurring in elderly patients. These are probably more common than is generally known.

2. The loss of weight and strength in the presence of a good appetite is most characteristic. It should lead one to examine the patient very closely for other symptoms of hyperthyroidism. The only other condition of which this syndrome is so characteristic is diabetes mellitus. The degree of weight loss is variable, but may be extreme, 30 pounds (13.6 Kg.) a month. The food intake is invariably increased. Loss of strength can easily be demonstrated in the performance of any single act of strength, as in stepping up on a chair.

3. There is persistent tachycardia associated with a normal or increased pulse pressure. The pulse is abnormally rapid (from 100 to 160 per minute) day in and day out. The systolic pressure has a tendency

to rise; the diastolic pressure drops and may even fade to zero. The average blood pressure readings are 150 systolic, 70 diastolic. A systolic blood pressure below 110 is rare. The circulatory rate is 50 per cent or more above normal. Cardiac dilatation and hypertrophy develop. Auricular fibrillation, often of a transient nature, occurs in half the cases beyond the age of 50 but is rare under 30.

4. Nervousness and tremor are present. The nervousness begins with the other symptoms and is of an objective character and is not what is called "inward nervousness." The patient moves rapidly, moves frequently, talks and even thinks rapidly. He is objectively overactive. Tremor is always present. This tremor cannot be arrested by pressure, as when the tips of the examiner's fingers are pressed against the finger tips of the patient.

5. Of eye signs the stare is the earliest and is evidenced by the showing of white sclerae between the upper lid and the iris (Dalrymple's sign). This appears more easily when the patient is subjected to stress and strain. The exophthalmos is usually symmetrically bilateral, but one eyeball may bulge more than the other. Von Graefe's sign is present when the eyeball is moved downward and the upper lid follows tardily or not at all, Moebius' sign when convergence is imperfect or lacking, Stellwag's sign when winking is infrequent and incomplete, with drying of the corneal epithelium and the formation of blood vessels on the cornea as the result of exposure, and Joffroy's sign when wrinkling of the forehead is absent when the eyes follow an object as far upward as they can rotate.

6. An increased basal metabolic rate is constant. A thyroidectomy is not indicated in cases suspected of hyperthyroidism in the presence of a normal basal metabolic rate. Because the first test in even a normal person may be high and because the factor of error is large, it is best to consider all readings up to plus 25 normal unless found repeatedly. The clinical evidences of increased heat production are important. There is intolerance to heat, increased tolerance to cold, flushing of the skin and a tendency to sweat. The hands and feet are never cold but warm and usually moist. The patient is very intolerant of oxygen deprivation and suffers from dyspnea on exertion.

Symptoms not constantly present are the following: Gastrointestinal symptoms, e. g., so-called colitis, usually due to the tremendously increased food intake. Diarrhea, especially in the crisis; two or three normal bowel movements a day are usual. The menstrual flow lessened or absent. Pruritus and pigmentation of the skin. Finger nail changes—the nail tends to leave its bed before reaching the end of the finger; it looks much as though injured by a sliver. Glycosuria is quite common (15 per cent) but is associated with a normal blood sugar. True diabetes is probably a little more frequent than in normal persons. Blood iodine is elevated in all cases. Blood cholesterol is diminished.

Crises are often set off by stress and strain, an infection, or an operation either on the thyroid or on some other organ; e. g., a tonsillectomy. The symptoms appear in the following order: sleeplessness, marked exaggeration of nervousness, anorexia, nausea and vomiting, sometimes diarrhea, high fever, delirium, jaundice, coma and death. The presence of marked mental disturbance is of serious import and in many cases presages death.

Therapy.—Prophylaxis: The appearance of the earliest signs of this condition should be watched for and treatment promptly instituted to prevent the development of vicious circles. This is done by lessening speed, stress and strain in those not fit to endure them. Predisposed persons must be given ample time to convalesce from any disease before returning to full duty. The thyroid hyperplasia liable to occur in children born to hyperthyroid mothers may be prevented by a month's mild treatment with iodide (e. g., syrup of hydriodic acid, prescription 3) during midgestation.

Treatment: (A) Surgery is the treatment of choice in fully developed cases, but it usually needs to be preceded and always followed by (B) suitable medical treatment. (C) Roentgen therapy should be reserved for cases unsuitable for surgical treatment or those who refuse operation.

A. Surgery requires (1) determination of operability, (2) preoperative preparation, (3) choice of proper surgical procedure, (4) postoperative care and (5) treatment of crisis, complications or sequelae.

1. The general rule for the determination of operability in a case of exophthalmic goiter is as follows: If the symptoms are improving, the patient will not die; if the symptoms are at a stationary level, it is unlikely that the patient will die; if the symptoms are growing progressively worse he is likely to die, and if he is in or approaching a crisis he will surely die if operated on. More specifically the following criteria are most important:

(a) If a patient has lost 40 pounds (18 Kg.) the past year but for the past six months has maintained a stationary weight, the risk is not great. If he has lost 20 pounds (9 Kg.) in the past two months the risk is not as good. If he has lost 10 pounds (4.5 Kg.) in the past month and still is losing, the risk is still worse. In fact, if he has lost only 3 pounds (1.4 Kg.) in the preceding week a thyroidectomy should not be done. Of course, a big weight loss is worse than a small weight loss; but a recent weight loss, even a small one, is worse than a large weight loss a year before. On the other hand, a recent gain in weight is very assuring. An accurate weight curve is more important than a series of tests to determine the basal metabolic rate.

(b) A patient who has retained his strength will tolerate a severe reaction; a feeble patient may die from a mild reaction. If the patient is able to be up and about most of the day and if he can walk round a block with reasonable ease, he has sufficient strength to carry him through a thyroidectomy. If he can step up on an ordinary chair his strength is good; if he needs a little help it is not bad; if he cannot step up on a low stool one should be very loath indeed about undertaking an operation.

(c) Nervousness is difficult to measure as to degree. A person who is easily upset, who on mild stress and strain becomes excited and tremulous, whose eyes stare wildly on little provocation and who is breathless on slight exertion will unquestionably have a sharp postoperative reaction. As calmness and tranquillity replace the restlessness and excitability, the risk measurably improves.

(d) The basal metabolic rate in itself is not so important as the effect of this rate on the patient. If the basal metabolic rate is under plus 50, the patient may be either a good or a poor risk; if it is over plus 60 it

is prudent to assume that he is a poor risk. A persistently dropping basal metabolic rate is of good prognostic significance.

(e) The average pulse rate in exophthalmic goiter is from 110 to 120; if it is persistently between 130 and 140 the risk is definitely increased. Auricular fibrillation is not serious. Decompensation as evidenced by edema of the legs or ascites must be remedied before operation. The ability to walk a block without undue dyspnea practically guarantees a heart that will carry the patient through a thyroidectomy.

(f) Other things that increase the dangers of operation are long duration of the symptoms, old age, evidence of other disease such as nephritis, toxic hepatitis or hypertension, severe myocardial damage, extreme youth and anatomic abnormalities.

2. Preoperative preparation consists of the administration of iodide, high food intake and partial rest.

(a) Any form of iodide is efficient. It is usually given as Compound Solution of Iodine (Lugol's solution) in doses of 0.7 cc. in milk or grape juice three times daily after meals. But giving iodide, in the form of Solution of Potassium Iodide (prescription 1), is probably better technic, because the local effect of iodine is not desired. The exact dosage is not known. Small amounts seem as effective as larger quantities; hence the latter are not indicated.

(b) A high food intake is imperative. This can be accomplished at times with high calory or high carbohydrate diets. At other times it is better to let the patient eat large quantities of the foods he prefers and supplement his meals with small lunches in the morning, afternoon or before retiring. Meat is not contraindicated. In those with a large weight loss there is a secondary hypoproteinemia and meat is a necessity.

(c) Rest is obviously essential (see medical treatment). One qualification must be made. A patient kept at flat bed rest soon develops a profound weakness that makes him quite helpless during the reaction following an operation. His strength must be preserved by allowing him to be up and about several hours daily. No patient should be operated on immediately after complete bed rest.

The immediate preoperative orders are a full supper the night before the operation and, in addition, fruit juices or food at bedtime; Phenobarbital 0.1 Gm. and sodium bromide 1 Gm. (prescription 5) at 9 p. m.;

PRESCRIPTION 5.—Sodium Bromide Medication

R Sodium bromide	30.00 Gm.
Water	30.00 cc.
Syrup of glycyrrhiza	to make 120.00 cc.

Teaspoonful in milk after meals and at bedtime.

Compound Solution of Iodine 2 cc. in milk or grape juice in afternoon and forenoon; an enema in the morning; hypodermic injection of morphine sulfate 0.01 Gm. and atropine sulfate 0.5 mg. one-half hour before operation.

3. The choice of surgical procedure lies between a ligation of the superior thyroid vessels, subtotal removal of one lobe or a subtotal removal of both lobes and the isthmus. It is probable that a ligation does very little to the course of the disease and its indications are questionable. If, after from six to eight weeks of preparation the patient is still a poor risk, a subtotal removal of one lobe is advisable. The second lobe is best removed from four to eight weeks later, after improvement has occurred and before the fibrous adhesions have become too firm.

4. For postoperative care the patient needs fluids, food, rest and iodide. Water, orange juice, grape juice, lemonade or ginger ale is given by mouth soon after the operation. Some vomiting invariably occurs, but this need not stop the administration of fluids by mouth. A proctoclysis is to be continued off and on the first twenty-four hours to supplement the fluid intake. Physiologic solution of sodium chloride is preferable, since this replaces the chlorides lost in large quantities through sweat. If fluids are not retained either by mouth or by bowel, 5 per cent dextrose in physiologic solution of sodium chloride is given either by hypodermoclysis or by phleboclysis. Sodium iodide (1 Gm. or more) may be given in the proctoclysis or in the parenterally administered fluid. The second day, the iodide is continued by mouth. Morphine sulfate from 0.01 to 0.015 Gm. is administered frequently for either pain or restlessness. On succeeding days, pain and neuralgia can usually be controlled with acetylsalicylic acid (0.30 Gm. tablet repeated as frequently as required). The harassing cough responds best to codeine phosphate (prescription 6). A sitting posture is more comfortable on the first

PRESCRIPTION 6.—Codeine Phosphate Medication

℞ Codeine phosphate	0.50 Gm.
Water	2.00 cc.
Aromatic Syrup of Eriodictyon.....to make	60.00 cc.

Teaspoonful in a little water every hour for 3 doses, then as required (to check cough).

day. On the second day cramps and backache can be relieved somewhat by allowing the patient to lie in any comfortable position. On the third day he can be out of bed. The diet consists of anything that the patient will eat and it is increased as rapidly as he will tolerate it. A daily dressing even if not necessary, is comforting to the patient. Drains can be safely removed in forty-eight hours. The sutures in the skin should be removed in seventy-two hours unless one wishes to leave the patient as a permanent reminder of his operation a parallel series of stitch hole scars. Regardless of the technic used, in about a week serum collects under the scar, appearing first as a small fluctuating area in the scar, which later opens up leaving it permanently widened. This can be easily pierced with the point of the scissors, with avoidance at times of considerable disfigurement.

5. After the operation the immediate complications peculiar to thyroidectomy are (a) crisis, (b) hemorrhage, (c) obstructive dyspnea and (d) tetany.

(a) A crisis is a marked exaggeration of the usual postoperative reaction and its treatment is the same as the usual postoperative treatment; namely, fluids, dextrose, morphine and iodide. The fluid intake in a crisis should reach 5,000 cc. a day. The intravenous route is preferable but owing to the marked restlessness it may be impossible. Dextrose is given in as large amounts as can be utilized; that is, not beyond the appearance of glycosuria. Alcohol or other cool sponging and ice bags to the groin and the axilla will reduce the temperature. In auricular fibrillation strophanthin should be given intravenously, 0.25 mg. as the first dose. This may be repeated every eight hours for the first twenty-four hours, provided slowing of the pulse occurs within thirty minutes after each dose has been given.

(b) Bleeding may appear externally or may be hidden deep in the neck. The latter type is a frequent cause of obstructive dyspnea and is evidenced by a massive cylindric swelling of the entire neck. Opening

the wound, packing it or locating the bleeding point is the treatment demanded.

(c) Obstructive dyspnea is promptly recognized as a gradually increasing inspiratory stridor. The wound is examined for the swelling of a retained blood clot. If present, the wound is immediately opened. If not, the vocal cords are examined for a bilateral cord paralysis, unilateral cord paralysis plus edema, or edema alone. From the results one can decide on the necessity of a tracheotomy. In mild cases the administration of oxygen may carry the patient through until the edema subsides. As soon as any cyanosis appears, a tracheotomy should be done promptly; for these patients do not tolerate oxygen want for long.

(d) Tetany begins with numbness and tingling in the hands and feet, followed by stiffness of the muscles of the hand, then carpal and pedal spasm, occasionally laryngeal spasm, and finally convulsions. If, as soon as numbness and tingling appears, the patient is given 4 Gm. of calcium lactate every hour, the cramps will not set in. The dosage can be reduced to 4 Gm. three times a day the following days but must be continued for many months. Spontaneous improvement always occurs but a latent tetany exists which will require at least 1 Gm. of calcium lactate daily for an indefinite period. If cramps or convulsions are present, 10 cc. of 5 per cent calcium gluconate solution is given intravenously and repeated in fifteen minutes if necessary. The calcium lactate is then given by mouth. These measures will control nearly all attacks.

If not, parathyroid extract should be given (1 ampule every four hours) to tide the patient over the acute stage of hypocalcemia. Indefinite continuance of dosage of parathyroid extract is not indicated, as the system becomes immune to the drug.

B. Medical treatment: 1. Psychotherapy is of prime importance as emotion, especially suppressed emotion, is an important factor in the vicious circle prevailing in this disease. Emotion stirs the thyroid and the thyroid stirs the emotions. It is worry and anxiety, not work, that are harmful. Work that one dislikes, thwarted ambition, domestic infelicity and psychosexual maladjustment are potent factors. In all such cases one must either remove the patient from these untoward influences or make the patient tolerant to them, which can sometimes be done by the patient comprehending the fact that it is not the condition we live under but the revolt against it that is harmful. He must cultivate a peaceful poise.

2. Rest, both physical and mental, in degrees proportionate to the gravity of the case and in quality of a kind enjoyed by the patient, needs to be provided. Two weeks of absolute rest in bed is often a very good initial treatment.

3. Cold applications should be made locally. A flannel covered ice bag over the thyroid lessens pulsations and probably also the secretion of the thyroid. The ice bag over the precordium diminishes palpitation and slows the pulse in addition to the enforcing of rest.

4. Diet should be high in caloric value (from 5,000 to 6,000 calories) given in six meals a day. It should be high in carbohydrates, high in fat and relatively low in protein. Stimulants should be avoided.

5. To lessen the excitability, one may prescribe bromide (prescription 5) or its combination with phenobarbital (prescription 7) or, if these are insufficient, with the addition of codeine phosphate (prescription

6). Quinine hydrobromide (prescription 8) has been especially recommended as a sedative in exophthalmic goiter as well as because it lessens metabolic activity. The patient's relative immunity to cinchonism has been suggested as a diagnostic aid. It must be remembered that hyperthyroid patients are likely to be hypersensitive to nearly all other kinds of drugs. They are especially hypersensitive to epinephrine. In general, smaller than average doses of most drugs should be used initially.

6. Iodide certainly has a profound effect for good or ill. Small doses, such as five drops of the Syrup of Hydriodic Acid (prescription 3), may be tried, the effect being carefully watched and administration discontinued as soon as improvement seems to end. Larger quantities, e. g., prescription 1 in doses of 0.5 cc. in water three times a day, have greatly lessened the mortality of operation, if employed preoperatively and if the operation is undertaken at the moment of

PRESCRIPTION 7.—Sodium Bromide and Phenobarbital

R Potassium bromide 20.00 Gm.
Elixir of phenobarbital..... to make 120.00-cc.
Teaspoonful in milk after meals and two at bedtime.

optimal improvement. This amelioration is almost pathognomonic of the condition but, because of final aggravation that is to be expected, cannot be relied on for cure. There is no proof that iodide makes a case

PRESCRIPTION 8.—Quinine Hydrobromide

R Quinine hydrobromide 10.00 Gm.
Divide into 30 capsules.
Three capsules three times daily.

of true exophthalmic goiter worse, although the patient may, and usually does, grow worse in spite of prolonged iodide medication. If one wishes to use iodide as a curative drug, one should keep the patient under close observation. The moment improvement ceases, one should recommend an immediate thyroidectomy. Under this regimen little harm will ensue.

7. Gonadal substitution therapy may be worth trying in hyperthyroidism appearing at the menopause to bridge over the period of acute endocrine imbalance.

8. Symptomatic treatment should be given. The bowels should be kept open, preferably by Effervescent Sodium Phosphate, one or two teaspoonfuls in half a glass of water on arising. Deficiency of gastric hydrochloric acid may call for administration of the acid. Acidosis, a serious complication, occurring after operations, during infections and gastrointestinal upsets, should be treated by large quantities of water, dextrose and sodium bicarbonate. Heart failure due to auricular fibrillation is helped by digitalis (and rest in bed) and with smaller doses than are ordinarily required. Otherwise the tachycardia is not influenced by digitalis bodies. This is so definite as to be almost of diagnostic value.

C. For patients in whom the medical treatment is not sufficiently satisfactory and who refuse operation, roentgen irradiation offers some prospect of cure. As the skin of these patients is hypersensitive to the rays, a dose of 400 roentgens is given to the thyroid area by three ports (right, left and midportion) for three or more times at intervals of from three to six weeks. The results of each treatment should be checked by a basal metabolic test before the next one is given. As with surgical therapy, here too competent medical care before and afterward is a sine qua non to success. It may take six months before the full effect of the ray therapy can be estimated.

Special Article

VITAMIN A REQUIREMENTS AND PRACTICAL RECOMMENDATIONS FOR VITAMIN A INTAKE

LELA E. BOOHER, Ph.D.

WASHINGTON, D. C.

This article and others recently published or to be published comprise a new series on the present status of our knowledge of the vitamins. They have been prepared under the general auspices of the Council on Pharmacy and Chemistry and the Council on Foods. The opinions expressed are those of the authors and not necessarily the opinions of either council. Reprints are not available but the articles will be published later in book form.—Ed.

The estimation of vitamin A requirements necessitates the measurement of some physical or chemical criteria dependent on vitamin A intake. The known specific criteria which characterize a vitamin A deficiency in the animal organism have been summarized by Bessey and Wolbach.¹ Of the several recognized signs of vitamin A deficiency, it now appears that hemeralopia, or partial night blindness, is the earliest to appear. Fortunately it is a condition which lends itself readily to physical measurement. The amount of vitamin A that will just prevent hemeralopia probably represents something a little less than the minimum requirement. Certainly the vitamin A intake should not fall below the level that will be sufficient to prevent night blindness. A liberal margin of safety should be allowed for physiologic variations and for enabling the organism to lay by a store of this vitamin against such emergencies as illnesses attended with low or restricted intake of food. Still more liberal amounts should be provided for growing children, for persons recovering from wasting diseases and for pregnant and lactating women.

As a result of observations on the widespread and profound cytologic changes associated with vitamin A deficiency, Wolbach² has suggested that vitamin A is a structural material which may be solely concerned in maintaining an apparatus within cells and not in the chemical processes proper for which the apparatus is necessary. If such is the case, it would seem logical that vitamin A requirements should bear a definite relationship to the body weight rather than to energy metabolism, and in some of the data reviewed herein this deduction is strongly supported. A rough approximation of vitamin A requirements also would be obtained through a correlation of dietary surveys with the incidence of night blindness for large cross-sections of the population. Dietary surveys, resolved into terms of vitamin A intake, in conjunction with surveys of the incidence of night blindness made on the same group of persons, should furnish practical confirmation of the experimentally determined estimates of vitamin A requirements on relatively few rigidly controlled subjects.

A review of the work along these two lines of approach will reveal that only a feeble beginning has been made toward establishing a precise estimate of the

From the Bureau of Home Economics, U. S. Department of Agriculture.

1. Bessey, Otto, and Wolbach, S. B.: *The Physiology and Pathology of Vitamin A*, J. A. M. A., to be published.

2. Wolbach, S. B.: *Vitamin Deficiency Experimentation as a Research Method in Biology*, Science **86**: 569-576 (Dec. 24) 1937.

vitamin A requirements of human beings and of factors which affect these requirements. It is not to be implied that measurements of dark adaptation are all that is to be desired as evidence of adequacy or inadequacy of vitamin A intake; they probably represent the clearest evidence that exists for the present. Nor should it be assumed that the instruments and means available for such measurements are the last word in either simplicity or precision.

FACTORS AFFECTING VITAMIN A REQUIREMENTS

It is quite generally conceded that the most careful control of experimental laboratory animals has not been rewarded by uniformity of response to graded intakes of vitamin A. This being the case with so well standardized an animal as the rat has now come to be, one may logically expect even greater physiologic variation in the vitamin A requirements of human beings. The only practical solution to the problem is to allow a generous margin of safety over any estimate based on studies of human subjects necessarily limited in number. Experimentation on the human vitamin A requirements needs to be conducted over a considerable period of time in order to obtain a fair estimate for individual subjects.

Certain physiologic conditions have been reported³ to alter the utilization of vitamin A and its carotene precursors; for example: 1. Bile is essential for the utilization of carotene but apparently not for the utilization of vitamin A; also, if bile is shunted from the small intestine to the colon, the utilization of carotene is prevented. 2. Liquid petrolatum does not interfere markedly with absorption of vitamin A from the intestine but does inhibit the absorption of carotene. 3. The composition of the diet, other than its vitamin A content, has been reported to affect the absorption and utilization of both vitamin A and provitamin A.

Wilson, Das Gupta and Ahmad³ studied the influence of the fat content of the diet in relation to the absorption of the carotene of raw carrots or of cooked spinach in an adult human subject. They found that only about 50 per cent of the carotene was absorbed when the diet was devoid of fat, whereas from 80 to 90 per cent was absorbed when the diet contained moderate amounts of fat. Basu³ conducted similar but more extended experiments on the absorption of vitamin A and of carotene by white rats and concluded that different oils varied in their effect on absorption and utilization of vitamin A and of carotene according to the degree of unsaturation of the oil. Utilization was better with the more unsaturated oils. Basu also suggested that the essential unsaturated fatty acids may be linked with the utilization of the vitamin A activity of the food rather than that absence of the fatty acids in themselves represents a distinct dietary deficiency.

Friderichsen and Edmund⁴ have reported striking differences in the utilization of the vitamin A of fish liver oils and the carotene of carrots or spinach by young children under 2 years of age. The dried spinach induced discernible improvement in dark adaptation with about one tenth the dosage (in terms of interna-

tional units) required in the form of fish liver oils. The response with dried spinach was also greatly prolonged over that induced by fish liver oils. Relatively large quantities of carrot juice, mashed carrots or β -carotene often proved to be ineffective in restoring normal dark adaptation in young children who showed distinct evidence of subnormal dark adaptation.

It must be concluded that our knowledge of the factors which affect the utilization of the vitamin A activity of foods and of the physiologic conditions which may alter these is for the present very limited. Since it is customary to evaluate the vitamin A content of diets on the basis of biologic assay values as determined with laboratory animals (rats) and without regard to the particular vitamin A or carotene sources, the practical solution lies in providing for liberal amounts of vitamin A in the human diet.

VITAMIN A REQUIREMENTS FOR THE PREVENTION OF NIGHT BLINDNESS

The vitamin A units, as expressed throughout this article, refer to U. S. P. or international unit values in accordance with the requirements of the Council on Pharmacy and Chemistry⁵ for labeling vitamin A and vitamin D preparations.

Investigators have applied various means for the measurement of the rate of dark adaptation to the problem of estimating vitamin A requirements of human beings. These several methods, however, involve a principle which is common to all; namely, the measurement of the power of the eyes to adapt themselves to dim illumination. Some subjects are maximally adapted to the dark, and the light threshold measured immediately thereafter is taken as a criterion of dark adaptation; in other instances, the subjects are adapted to a moderately bright light (with or without preliminary dark adaptation) and measurements of light thresholds are made at intervals in darkness following this. Hecht⁶ has recently published a summary of the chemistry and kinetics of dark adaptation and has outlined the types of dark adaptation responses which follow adaptation to light of different intensities.

Friderichsen and Edmund⁴ made a study of 106 children under 2 years of age. The children were adapted to the dark for thirty minutes and then held at a distance of 10 cm. from a lamp, the apparent brightness of which could be varied by suitably graded filters for measurement of the light threshold. A child's positive response to light was indicated by certain characteristic reflex movements of the child's brow and eyelids. Although these workers developed a method which would seem highly promising if applied to the problem of the daily requirement of very young children for vitamin A, their work to date has been limited to a study of the utilization of carotene and vitamin A from different sources. Their observations have already been discussed.

Jeans and his co-workers⁷ have reported on the use of the Birch-Hirschfeld instrument, later displaced in their work by the "biophotometer," for the measurement of dark adaptation as a practical clinical method for detecting vitamin A deficiency. Although some criticism of the reliability and reproducibility of mea-

3. Utilization of Vitamin A and Carotene, editorial, J. A. M. A. 109: 1045 (Sept. 25) 1937. Basu, N. K.: Vitamin A and Fat Metabolism, *Vitaminforschung* 6: 106-110 (April) 1937. Wilson, H. E. C.; Das Gupta, S. M., and Ahmad, Bashir: Studies on the Absorption of Carotene and Vitamin A in the Human Subject, *Indian J. M. Research* 24: 807-811 (Jan.) 1937.

4. Friderichsen, C., and Edmund, Carsten: Studies of Hypovitaminosis A: II. A New Method for Testing the Resorption of Vitamin A from Medicaments, *Am. J. Dis. Child.* 53: 89-109 (Jan.) 1937; III. Clinical Experiments in the Vitamin A Balance in Children After Various Diets, *ibid.* 53: 1179-1201 (March) 1937.

5. New and Nonofficial Remedies, Chicago, American Medical Association, 1937, p. 448.

6. Hecht, Selig: Rods, Cones and the Chemical Basis of Vision, *Physiol. Rev.* 17: 239-290 (April) 1937.

7. (a) Jeans, P. C., and Zentmire, Zelma: A Clinical Method for Determining Moderate Degrees of Vitamin A Deficiency, *J. A. M. A.* 102: 892-895 (March 24) 1934; (b) The Prevalence of Vitamin A Deficiency Among Iowa Children, *ibid.* 106: 996-997 (March 21) 1936. (c) Jeans, P. C.; Blanchard, Evelyn, and Zentmire, Zelma: Dark Adaptation and Vitamin A, *J. A. M. A.* 108: 451-453 (Feb. 6) 1937.

surements made with the biophotometer has been reported⁸ in a survey study of school children, other investigators⁹ have found the biophotometer and the Birch-Hirschfeld instruments satisfactory and useful for the purpose of detecting moderate degrees of night blindness. Feldman,¹⁰ Edmund¹¹ and Hecht⁶ describe the application of other means of measuring dark adaptation in which different sets of optical principles have been employed.

It would seem that the present difficulties surrounding any and all methods of measuring dark adaptation are at least as great as those involved in measuring basal metabolic rates. The method of Friderichsen and Edmund is limited to children so young that voluntary actions are not a complicating feature, but these authors mention that the tests are not easy to make but require great care, experience and knowledge of the reactions of small children. The methods adapted to older children and adults require the willing cooperation of the subject and an intelligence level corresponding to at least that of an average 6 year old child.

Observations by Jeans and his co-workers^{7c} on two 11 year old boys indicate that 3,000 units of vitamin A daily met their requirements as judged by the biophotometer test and standards which they consider normal responses. This level of vitamin A presumably is suggested not as the minimal level which would maintain normal dark adaptation but as an entirely adequate amount which might be considerably above the minimal requirement.

Jeghers,⁹ using the biophotometer test, has reported that the dark adaptation of a normal adult was not maintained at peak efficiency for more than about one week when the vitamin A intake was limited to 200 units a day, despite the fact that the subject had previously received massive daily doses of vitamin A for a period of three months. A normal adult (weighing 52 Kg.) subjected to a very similar dietary program and studied at the Bureau of Home Economics, U. S. Department of Agriculture,¹² but who had not taken vitamin A except for that available in an ordinary freely chosen diet, showed definitely impaired dark adaptation¹³ only after a period of approximately one month. After the impaired dark adaptation became apparent, it progressed with amazing rapidity until arrested by the administration of vitamin A. Whether this great difference in depletion of vitamin A reserves of the two subjects mentioned is indicative of the magnitude of the physiologic variations to be expected can only be left for further experimentation to determine. It might be of interest also to mention that the experimental subject studied at the Bureau of Home Economics showed no evidence of keratinization of the epithelium of the cornea at the time when dark adaptation was slowest but did show a marked constriction of the field of vision when tested¹⁴ by means of a

perimeter. A level of from 18 to 20 units of vitamin A (corresponding to about 6 micrograms of vitamin A) per kilogram of body weight resulted in very slow improvement in the dark adaptation of this subject, whereas from 30 to 35 units per kilogram of body weight soon restored and maintained maximum dark adaptation. This level would amount to approximately 2,100 to 2,450 units of vitamin A for an adult of 70 Kg.

Edmund and Clemmesen¹⁵ have recently reported a study of the vitamin A requirements of young adult men as carried out at the state prison in Nyborg (Denmark). Measurements of visual adaptation were made on twenty-eight young male prisoners in the summer and autumn of 1936, during which interval all the subjects received the fixed prison allotment of food. Following this the subjects were divided into two groups, one of which continued to consume this regular fare while the other group received in addition a half liter (about one pint) of whole fluid milk daily for a six month (autumn and winter) experimental period. The fourteen subjects receiving the fixed prison allowance, which contained an average of 1,225 units of vitamin A daily, showed seasonal oscillations in their powers of visual distinction (at different standard intensities of illumination) and occasional dysadaptation in some few cases. The subjects receiving the fixed prison allowance plus the milk supplement, the total food containing an average of 1,370 units of vitamin A daily, showed normal visual adaptation at all seasons. The vitamin A values assigned to the food items in the fixed prison allowance, being average values, do not disclose the natural seasonal variations in the vitamin A content of the food items. Actually the vitamin A intake of the control group would be a little more than 1,225 units during the summer months and a little less than 1,225 units during the winter months. It therefore required a year-round average of 1,370 units of vitamin A daily to provide an overall coverage for seasonal variations in the vitamin A values of the food in order to insure normal visual adaptations at all seasons. It was concluded, therefore, that about 1,400 units of vitamin A daily for an adult weighing from 68 to 69 Kg. would suffice for the support of normal visual adaptation.

According to Guilbert, Miller and Hughes,¹⁶ a level of vitamin A or carotene intake which is just sufficient to prevent gross signs of hemeralopia suffices also for excellent gains in weight and for maintenance of a thrifty physical appearance of animals for indefinite periods, although the storage of the vitamin in the body may be very meager indeed. These workers report that several species of animals (cattle, sheep and swine) differing widely in body weight showed almost identical requirements for vitamin A or carotene per kilogram of body weight for the prevention of hemeralopia. It was suggested that the minimal requirements of other vertebrate species, including the human being, might bear the same quantitative relationship to body weight. A daily intake of approximately 40 to 50 units¹⁷ in the form of carotene ("25 to 30 micrograms of carotene") or about 20 to 30 units¹⁷ of vitamin A ("6 to 8 micrograms of vitamin A") per kilogram of body

8. Palmer, C. E., and Blumberg, Harold: The Use of a Dark Adaptation Technique (Biophotometer) in the Measurement of Vitamin A Deficiency in Children, *Pub. Health Rep.* 52: 1403-1418 (Oct.) 1937.

9. Jeghers, Harold: The Degree and Prevalence of Vitamin A Deficiency in Adults, *J. A. M. A.* 109: 756-761 (Sept. 4) 1937. Maitra, M. K., and Harris, L. J.: Vitamin A Deficiency Among School Children in London and Cambridge, *Lancet* 2: 1009-1014 (Oct. 30) 1937. Corlette, M. B.; Youmans, J. B.; Frank, Helen, and Corlette, Mildred G.: Photometric Studies of Visual Adaptation in Relation to Mild Vitamin A Deficiency in Adults, *Am. J. M. Sc.* 195: 54-65 (Jan.) 1938.

10. Feldman, J. B.: Instrument for Determining Course of Dark Adaptation and for Measuring Minimum Light Threshold, *Arch. Ophth.* 12: 81-85 (July) 1934.

11. Edmund, Carsten: Some Methods of Measuring Dark Vision, *Acta ophth.* 2: 153-169, 1925.

12. Booher, Lela E.; Callison, Elizabeth C., and Hewston, Elizabeth

Unpublished data.

13. As measured by the visual adaptometer, the optical arrangements

for which are those used in dark adaptation studies of Hecht.

14. Tests made by Drs. Louise Sloan and Allen Wood, Wilmer Eye

Clinic, Johns Hopkins University, Baltimore.

15. Edmund, Carsten, and Clemmesen, S.: On Deficiency of A Vitamin and Visual Adaptation. II, translated by Mrs. Clara Packness, London, Oxford University Press, 1937.

16. Guilbert, H. R.; Miller, R. F., and Hughes, E. H.: The Minimum Vitamin A and Carotene Requirement of Cattle, Sheep and Swine, *J. Nutrition* 12: 543-564 (May) 1937.

17. The U. S. P. or international units have been calculated by the author from the data as given by the investigators, 0.6 microgram of carotene and 0.3 microgram of vitamin A being considered equivalent to one U. S. P. or international unit. The quotations give the quantities in the terms used by the investigators.

weight was found to be sufficient for the prevention of night blindness in these three species of animals. If the same requirement per kilogram of body weight holds for the human species, a man weighing 70 Kg. would require daily about 1,400 to 2,000 units of vitamin A or, roughly, double this number of units in the form of carotene as a "physiologic minimum."

Experimentation with animals has shown¹⁶ quite conclusively that liberal allowances of vitamin A over and above the daily requirement which will support normal dark adaptation, an average growth rate and an outward thrifty physical condition are essential for maintaining bodily reserves of vitamin A and for the successful bearing and rearing of young. Experiments with animals have shown¹⁸ that a liberal intake of vitamin A is also conducive to longevity and to prolonging the prime of life.

On the basis of the limited number of quantitative studies on record, it would appear that the vitamin A requirements for the prevention of partial night blindness in adults was of the order of from 25 to 30 units per kilogram of body weight daily, or a total of approximately 1,400 to 2,000 units daily for an adult weighing 70 Kg. It would also seem that the daily intake of vitamin A per kilogram of body weight of adults required for the prevention of night blindness might be very nearly a constant for vertebrate species of animals generally. However, further quantitative studies on the vitamin A requirements of children are necessary in order that children's requirements may be interpreted in relation to adult requirement. Many more studies will also be needed before the magnitude of physiologic variation in vitamin A requirement can be estimated.

ANALYSIS OF DIETARY SURVEYS IN TERMS
OF VITAMIN A INTAKE

Dietary surveys resolved into terms of the essential food constituents, when compared with dietary requirements for the same food essentials, furnish a general index of the probable nutritive status of different population groups. In addition, these surveys point the way to specific means for dietary improvements.

The practical problem of food selection is influenced by several factors operating simultaneously and including family income or, more precisely, the amount of money spent for food, degree of urbanization, individual preference and application of available knowledge of foods and nutrition. In general, the classification of dietaries according to the amount of money spent for food per adult capita shows a distinct gradation in the qualities of the diets. Within any one of these classes further differences are observed according to the degrees of urbanization. With specific reference to vitamin A, it is quite obvious that foods rich in vitamin A are not the least expensive of the ordinary food items. The families living in cities or on farms in each region tend to be provided with more liberal allowances of vitamin A than families living in villages. The most probable explanation of this is that the city dwellers have access to good markets; the farm families can provide themselves with milk, butter and eggs as well as garden produce from their own farms, while the village folk, generally, share less of either of these advantages.

The average adult vitamin A intake daily was computed from a dietary survey made during the year 1935-1936 in different regions of the United States. At present data for the average vitamin A values of the

common foods determined directly in terms of U. S. P. or international units are insufficient for the purpose of evaluating the total vitamin A value of ordinary mixed diets. The vitamin A values of most of the common food items are, however, available in terms of Sherman units of vitamin A. Information furnished by several laboratories of recognized standing and having extended experience with the U. S. P. method of vitamin A assay indicate, from the growth rates of vitamin A assay rats which were fed the standard U. S. P. reference cod liver oil, that the value in Sherman units divided by a factor of from 1.5 to 2 is approximately equivalent to the value in U. S. P. or international units.¹⁹ The data for the dietary survey reported in the accompanying table were originally computed in terms of Sherman units of vitamin A. For purposes of correlation with the rest of the observations reported here these values

*Vitamin A Value of Diets of Families Not on Relief, 1935-1936
(in U. S. P. or International Units) **

Region and Degree of Urbanization	Average Units per Adult per Day† for Families Spending Weekly per Head for Food				
	\$1.25-\$1.87	\$1.88-\$2.49	\$2.50-\$3.12	\$3.13-\$3.74	\$3.75-\$4.37
City †					
North Atlantic.....	2,200	2,500	3,400	4,200	5,700
East North Central...	2,600	2,500	3,500	3,000	5,000
East South Central...	3,600	4,600	6,200	.....	.....
Pacific.....	3,300	4,000	4,500	5,400	5,700
Village §					
North Central.....	1,500	.....	2,900	.....	.....
Southeast.....	2,600	.....	4,100	.....	6,000
Pacific.....	2,500	.....	3,300	.....	3,700
Farm ¶					
North Central.....	3,000	.....	3,800	.....	4,200
Southeast.....	3,600	.....	5,400	.....	7,200
Pacific.....	3,600	.....	5,000	.....	.....

* Data furnished by Dr. Hazel K. Stiebeling, Senior Food Economist, Bureau of Home Economics, U. S. Department of Agriculture.

† The following scale of family coefficients was employed in evaluating the vitamin A intake for families of different types in terms of an adult:

- Child under 4 years.....0.75
- Boy 4-6; girl 4-7 years.....0.75
- Boy 7-8; girl 8-10 years.....0.75
- Boy 9-10; girl 11-13 years.....0.90
- Adult (man or woman).....1.00

These coefficients are essentially the same as the factors used to evaluate the adult intake of protein.

‡ Families of employed workers. Field work conducted by the U. S. Bureau of Labor Statistics.

§ All occupational groups.

¶ Farm operators. Farm-furnished food valued at farm prices.

have been divided by 2 as probably representing a fair approximation in terms of U. S. P. or international units of vitamin A.

The data in this table show quite strikingly how the average vitamin A intake varies with the amount of money available for food and for any one "food-spending group" with the degree of urbanization. A careful examination of the specific food items actually consumed by these different population groups also showed the need for popular education on the subject of foods

19. Dr. E. M. Neison, Food and Drug Administration, U. S. D. A., states in a personal communication: "When U. S. P. units of vitamins A and D based on international units for these vitamins came into use it seemed desirable to acquaint investigators in this country with the approximate relative values of international units and units which had previously been used in this country. On the basis of data obtained in assay of the U. S. P. reference cod liver oil against the international standard for vitamin A, it was possible to make an estimation of these relative values. The U. S. P. Vitamin Advisory Board issued a statement in which it was stated that 1 U. S. P. X Sherman or American Drug Manufacturers' Association vitamin A unit was approximately equivalent to 1.4 international or U. S. P. X (Revised 1934) vitamin A units. It was stated: 'These conversion factors should not be considered as having any official recognition.' Since that time it has become apparent that the conversion factor proposed at that time was inaccurate. Most of the assays that have come to my attention since that time show that 1 international unit of vitamin A will promote a growth rate in excess of 3 Gm. per week during the assay period in the U. S. P. method, indicating that a given product would contain fewer international than Sherman units. Since manufacturers of pharmaceutical preparations changed their assay procedure so as to determine vitamin A potency directly in terms of U. S. P. X (Revised 1934), or international, units this inaccuracy has been of no particular moment in the labeling of such products, and for this reason the U. S. Pharmacopoeia had not concerned itself further with conversion factors of different vitamin A units."

18. Batchelder, Esther L.: Nutritional Significance of Vitamin A Throughout the Life Cycle, *Am. J. Physiol.* 109: 430-435 (Sept.) 1934.

and nutrition. While some families had too little money to buy a fully adequate food supply regardless of how carefully they might select it, still a large proportion now existing on poor diets would be able to obtain a fully adequate diet if they had applied the present knowledge of nutrition to the problem of the best selection of food.

It is apparent that many members of families in the lower income groups probably are on the borderline of a recognizable vitamin A deficiency. Because each of these group averages embraces rather wide individual variations in vitamin A intake, it is to be expected that a fair proportion of persons in the lowest income groups actually receive less than the "physiologic minimum" requirement of vitamin A. This deduction is amply borne out by other surveys on the incidence of partial night blindness.

Jeans and Zentmire^{7b} tested 404 country and village school children of Iowa from 6 to 15 years of age and found latent night blindness in 26 per cent of the country children and in 53 per cent of the village children. The highest incidence of night blindness was found in families of the lowest income classes.

Maitra and Harris⁹ found definitely subnormal dark adaptation among elementary school children (from 8 to 14 years of age) in London and Cambridge to the extent of about 30 per cent of the 193 children examined. These investigators also found a tendency toward higher incidence of hemeralopia among the younger children of the group.

The vitamin A reserves of new-born infants have been reported²⁰ to be very low, the livers of infants being found to contain only about 14 to 17 units of vitamin A per gram in contrast to an average of 220 units of vitamin A per gram reported²¹ for the livers of healthy adults. The vitamin A reserves of a well fed infant rise very rapidly during the first few months of life. The premature and artificially fed infant needs special attention with regard to the vitamin A supply of the food.

A very high incidence of "dysadaptation" has been found among pregnant women. Edmund and Clemmesen²² report that 50 per cent of the pregnant women admitted to a Copenhagen municipal hospital showed signs of subnormal visual adaptation.

PRACTICAL RECOMMENDATIONS FOR VITAMIN A INTAKE FOR PERSONS OF DIFFERENT AGES

The physiologic minimum requirement of vitamin A for a man weighing 70 Kg. would appear to be on the order of from 1,400 to 2,000 units of vitamin A daily. Provision for a supply of vitamin A which furnishes barely enough to prevent measurable signs of deficiency is of course unsound and in serious opposition to the best interests of the health and welfare of subjects at any age. A 50 per cent margin of safety, providing 3,000 units of vitamin A daily for an adult weighing 70 Kg., would seem to be none too liberal in view of the facts that there may be considerable physiologic variation in the requirement for vitamin A, that at least a moderate storage probably is highly desirable and that there is some question about the relative utilization of the carotene sources of this vitamin.

The Technical Commission for the Study of Nutrition of the Health Organisation of the League of

Nations recommends²³ an allowance of from 2,000 to 4,000 units daily for an adult as fully adequate on the basis of an intake of 500 cc. of whole fluid milk, one egg, 25 Gm. of butter and a medium serving of a green, leafy vegetable daily. This recommendation of from 2,000 to 4,000 units of vitamin A was suggested in view of the range of from 1,400 to 3,000 units suggested by different investigators as a minimum requirement, the latter range being partly or mainly accounted for, it was supposed, by differences in the vitamin A content assigned to common foods by various workers.

The diets of infants and young children usually contain more milk than the diets of adults, and their diets are frequently supplemented with some kind of fish liver oil, so that in comparison with well nourished adults the well fed infant probably receives a considerably larger amount of vitamin A per kilogram of body weight. Any extra needs associated with rapid rates of growth would thus be taken care of as well as reasonable provision for building up a bodily reserve of vitamin A. It would seem important in the case of both premature infants and artificially fed infants to pay even more particular attention to the inclusion of liberal amounts of the so-called protective foods in order to permit them to build satisfactory bodily reserves of vitamin A and to supply adequate amounts of minerals and other vitamins as well.

The Technical Commission of the Health Committee of the League of Nations has recommended²⁴ that all children between the ages of 2 and 14 years be provided with about 1 quart of milk daily, in addition to an egg, servings of green, leafy vegetables and butter suited to the size of the child, and 3 Gm. of cod liver oil daily as the main sources of protective foods rich in vitamin A. These recommendations probably would provide for at least 6,000 to 8,000 units of vitamin A daily for growing children. For a more specific account of these recommendations the reader is referred to the publication cited.

A very effective means of dealing with the problem of supplying an adequate vitamin A intake for children of school age would be to serve carefully planned school lunches which would furnish liberal amounts of the so-called protective foods. Rose and her co-workers²⁵ and Hann and Stiebeling²⁶ have shown in very practical terms how school lunches may be planned to furnish more than 50 per cent of the probable vitamin A requirements of children of nursery and elementary school ages and to improve the diets of the children in other ways at one and the same time.

The Technical Commission of the Health Committee of the League of Nations recommends²⁴ a daily intake of at least 5,000 U. S. P. or international units of vitamin A for the pregnant and nursing woman. In terms of food items this may be translated as 1 quart of fresh, whole milk, one egg, 1 ounce of cheese, an average serving of a green, leafy vegetable and 1 teaspoonful of cod liver oil daily.

SUMMARY

The daily requirement for vitamin A just sufficient for the prevention of night blindness in a normal adult would appear to be on the order of from 20 to 30

20. Ellison, J. B., and Moore, Thomas: Vitamin A Reserves of the Human Infant and Child in Health and Disease, *J. Soc. Chem. Ind.* 55: 236 (March 20) 1936.
21. Moore, Thomas: The Vitamin A Reserves of the Adult Human in Health and Disease, *J. Soc. Chem. Ind.* 55: 235-236 (March 20) 1936.
22. Edmund, Carsten, and Clemmesen, S.: On a Deficiency of A Vitamin and Visual Adaptation, London, Oxford University Press, 1936.

23. Geneva Bulletin of the Health Organisation, League of Nations, vol. VII, April 1938.

24. League of Nations, Health Organisation: Report on the Physiological Bases of Nutrition, Geneva, 1935.

25. Rose, Mary S.: Foundations of Nutrition, New York, Macmillan Company, 1938.

26. Hann, Helen N., and Stiebeling, Hazel K.: Food Consumption of Children at the National Child Research Center, U. S. D. A. Circular, to be published.

U. S. P. units of this vitamin per kilogram of body weight, or a total of about 1,400 to 2,000 units daily for an adult weighing 70 Kg.

Allowing for a fair margin of safety and for the maintenance of a moderate storage of vitamin A in the body, a total of around 3,000 units of vitamin A daily is suggested for the normal adult. In view of other qualities of nutritional excellence provided by milk, butter, eggs and green leafy vegetables, these food items should be used in quantities which will provide a large proportion of this vitamin A allowance.

Provision of around 6,000 to 8,000 units of vitamin A daily for the growing child would presumably be adequate to take care of any extra needs associated with growth and development and to provide for a moderate bodily storage of vitamin A. A small supplement of some fish liver oil in addition to liberal quantities of whole milk, butter, eggs and green leafy vegetables is recommended for children in view of the excellence of these food items in vitamin A and other nutritive essentials important for the growing child. Particular attention should be paid to supplying the infant and even more especially the premature or artificially fed infant with liberal quantities of vitamin A, since infants are born with very meager stores of vitamin A in their livers.

The recommended allowance of vitamin A for pregnant and nursing women has been set at around 5,000 units or more daily, with a further suggestion that this allowance be supplied mainly by liberal amounts of milk, butter, cheese, eggs, green leafy vegetables and some small addition of fish liver oil.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

H. A. CARTER, Secretary.

SPERTI SUN LAMP NOT ACCEPTABLE

Manufacturer: Science Laboratories, Inc., 424 East Fourth Street, Cincinnati.

It is one of the functions of the Council on Physical Therapy to report from time to time on newly marketed devices recommended for use in physical therapy, particularly those which have elicited a number of inquiries from the public. The new Sperti Sun Lamp has been considered, after being purchased on the open market. This Sperti Sun Lamp (table model), Type SL 110, is entirely different in construction from the device reported on in *THE JOURNAL*, May 15, 1937, page 1713.

Tests were made on the erythematogenic effects and radiation characteristics of the lamp by a reliable investigator. The Sperti Sun Lamp is designed to operate on from 105 to 125 volts alternating current, 60 cycles, and, according to the manufacturer, it uses about 150 watts of electricity. The heart of the sunlamp is the burner, which consists of a thin-walled cylindric glass tube, about 2 cm. in diameter and about 13 cm. long, that contains mercury vapor. The length of the mercury arc between the electrodes is about 8 cm. The burner is mounted in a chromium-plated cylindric reflector, on a flexible standard that permits projection of the rays in various directions. The massive base contains a reactance which forms part of the operating equipment of the burner.

SPECTRAL AND TOTAL ULTRAVIOLET RADIATION MEASUREMENTS

The lamp was operated on 110 volts, alternating current 60 cycles, under which conditions the power used, as measured with a watt meter, was 85 watts. Under these conditions the ultraviolet spectral intensities at 3,663 angstroms and shorter

wavelengths were found to be closely the same as that of a Uviarc "hot" quartz mercury arc lamp. Evidently the thin-walled glass burner transmits ultraviolet radiation quite freely to wavelengths shorter than 2,537 angstroms. The manufacturer states that this sunlamp generates ultraviolet out to this wavelength, and in four places in his booklet of "Operating Instructions and General Information About the Sperti Sun Lamp" warns the user of this lamp, "You must wear goggles."

The total intensity of the ultraviolet including 3,132 angstroms and shorter wavelengths was 32.1 microwatts per square centimeter at 24 inches (61 cm.) from the front edge of the burner. Of this amount 31.7 per cent, or about 10.5 microwatts per square centimeter, is of wavelengths shorter than about 2,900 angstroms and 31.2 per cent is in the emission line at 2,537 angstroms.

In view of the fact that in sunlight there is no ultraviolet of wavelengths shorter than about 2,900 angstroms, it is evident that the ultraviolet emission of the Sperti "mercurlite" lamp is not representative of a Sun Lamp and, hence, is not acceptable for home use without the supervision of a physician.

ERYTHEMA TESTS

Erythematogenic tests also indicate the close agreement in spectral emission between the Sperti lamp and the hot quartz mercury arc. The erythematogenic effect on the untanned inner forearm was determined at a distance of 24 inches (61 cm.) from the front edge of the burner. The exposures ranged from fifteen to forty-five minutes, in five minute increments. At the end of four hours all exposures were quite red, characteristic of the erythema produced by the emission of short wavelength radiation, at 2,537 angstroms. The following day the erythema caused by the fifteen and twenty minute exposures had disappeared. The exposure for a minimum perceptible erythema was estimated to be between twenty-five and thirty minutes; the latter value was the calculated time of exposure. In terms of the hot quartz mercury arc lamp of the same intensity, the exposure would be twenty-seven minutes for a threshold erythema.

At a distance of 1 foot the time of exposure would be about one-fourth the value, or between six and seven minutes. The time of exposure recommended by the manufacturer is five minutes, at a distance of 1 foot.

In order that a lamp of this type may be representative of a "Sun Lamp" acceptable to the Council, it should be covered with a window of Corex D glass, 2 mm. in thickness, which is opaque to radiation of wavelengths shorter than 2,800 angstroms.

Tested with a Corex D window, and exposure at 1 foot, the Sperti Lamp produced a minimum perceptible erythema in about thirty minutes, which is not too prolonged for a home-model lamp.

Two pieces of advertising matter were examined by the referee. The first, "Operating Instructions," is on the whole acceptable, provided the lamp is sold only to physicians. However, if the pamphlet is to be distributed with the lamp when sold for home treatments, many of the claims will have to be altered to conform with radiation characteristics when Corex D glass is added. It is also noted that "sunlight starvation" is mentioned as a common cause for colds and other diseases. Critical evidence has not been presented to support these statements.

In the other pamphlet, "Here's a Genuine Mercury-Arc Sun Lamp," there are several objectionable features. The name is misleading, since the lamp as it stands is not a "Sun Lamp" but a "Therapeutic Lamp." Claims are made here that ultraviolet will build up the reserve physical energy and aid in the prevention of colds and common diseases, as well as promote a clear complexion.

In view of the foregoing report, the Council on Physical Therapy voted not to include the Sperti Sun Lamp, Type SL 110, in its list of accepted devices because (1) the ultraviolet radiation emitted does not conform with the requirements adopted by the Council for sun lamps, and (2) the advertising matter contains misleading or unwarranted claims.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JUNE 4, 1938

TRAUMA AND APPENDICITIS

Probably because trauma, next to cold, is associated in the minds of people with almost every disease, the first impulse of the surgeon is to reject the possibility as a cause of appendicitis. Deaver said that he had never seen a genuine case of traumatic appendicitis. John B. Murphy, however, as early as 1892 urged that trauma could be an exciting factor in appendicitis, and Howard Kelly claimed that traumatic appendicitis is more frequent than is commonly believed. He collected records of fifty cases, and Osler in his "Practice of Medicine" stated that "trauma plays a very definite role, and in a number of cases the symptoms have followed very closely a fall or a blow."

Three distinct opinions prevail. One categorically denies the existence of acute traumatic appendicitis and regards the occasional association of trauma with an attack of appendicitis as a coincidence. Another accepts the possibility of causal relationship but limits the role of injury to that of an activating factor bringing about an exacerbation in a previously diseased organ, denying at the same time that trauma per se is capable of originating an acute attack in a previously healthy appendix. Finally, there is the belief that traumatic appendicitis is a definite clinical entity. The latter opinion is gaining a wider recognition both by the medical experts and by the courts, which in recent decisions have recognized traumatic appendicitis as a compensable cause under the laws governing industrial compensation.

The exact mechanism of traumatic appendicitis has not been definitely elucidated. The trauma may be direct, such as a blow to the abdomen, a kick or a fall on the abdomen, or the pinioning of the abdomen against a fixed object. Indirect forces of violence are prolonged muscular strain or untoward or unusual sudden muscular action. Direct traumatization of the appendix or of its mesentery has been demonstrated in a few cases in which an immediate operation was performed. This, however, in view of its rarity, is in all probability not a true *modus operandi* in the majority of the cases. One cannot therefore accept

the postulate of Sprengel or of Fowler¹ that in order to prove a case of traumatic appendicitis one must be able to demonstrate at operation true traumatic lesions of the appendix, such as contusion, hematoma, laceration or rupture, and the presence of free blood in the peritoneal cavity. Ludington² clearly points out that even were such traumatic lesions present the advancing inflammation would soon mask them to the degree that they could not be recognizable at the time of operation and that the pathologic alterations present would therefore not differ from other cases of acute appendicitis.

A far more plausible theory, and one in harmony with our concept of the pathogenesis of acute appendicitis, is that of overdilatation of the organ by the influx of cecal contents as the result of trauma. Radiologists know that cecal contents may be forced into the appendix with the aid of moderate pressure. Fürbringer and von Hansemann³ were able to express the contents of a full cecum into the appendix by light manual pressure over the cecum, by light manual pressure over the ascending colon and by the introduction of air into the rectum. A blow on the abdomen or a muscular strain which increases the intracecal pressure could therefore force cecal contents into the appendix. The future course of events would depend on the condition of the organ. A normal appendix with a free lumen would empty itself of the material forced into it and would probably escape damage. In the presence, however, of chronic pathologic conditions, such as compressing or angulating adhesions, scars, fibrosis of its walls and particularly in the presence of coproliths, there exist, as Ludington pointed out, conditions favorable to the development of acute appendicitis; namely, a lumen obstructed by a coprolith, fecal stasis, defective drainage of the distal segment and an increase in the virulence of the contained organisms. Fecaliths are frequently found in the appendix in cases of traumatic appendicitis. They were present in thirty of Kelly's fifty cases; according to Brünig they were present in 65 per cent of the traumatic cases as contrasted with 35 per cent in the nontraumatic cases. They were found either in the lumen or in the free peritoneal cavity in each of the four cases reported by Bissell.⁴ Bissell believes that "the trauma caused the concretion to impinge tightly in the lumen of the appendix resulting in an obstruction in that organ, with hemorrhagic infarction, necrosis and perforation on the antimesenteric border."

The pertinent question is not whether trauma can originate an initial attack of appendicitis or whether its effect is that of lighting up dormant pathologic conditions. It is, rather, whether or not trauma can precipitate a clinical attack of acute appendicitis. The

1. Fowler, Royal H.: The Rare Incidence of Acute Appendicitis Resulting From External Trauma, *Ann. Surg.* 107: 529 (April) 1934.
2. Ludington, N. A.: Factors in the Etiology of Traumatic Appendicitis, *J. A. M. A.* 80: 1448 (May 19) 1923.
3. Fürbringer and von Hansemann, cited by Ludington.
4. Bissell, A. H.: Trauma as a Factor in Acute Appendicitis, *Arch. Surg.* 17: 672 (Oct.) 1928.

consensus is not only that it can but that the resulting attack is likely to be one of a grave, destructive type, with a clear clinical picture. Usually, after a blow on the abdomen, a kick, a fall, or a sudden muscular strain, severe sharp abdominal pain occurs, followed by vomiting. The initial pain and vomiting are characteristic and are presumably due to intraperitoneal shock. Then, in most cases, as pointed out by Behan,⁵ both symptoms cease and return later, as the result of progression of inflammatory changes within the abdomen. Rarely is there any evidence of bruising of the abdominal wall. There may be muscle rigidity and well localized tenderness over the right lower quadrant. Such a clinical picture should suggest the possibility of acute appendicitis. Procrastination is serious because of the severe destructive lesions characteristic of this entity.

IMMUNOLOGIC FACTORS IN WHOOPING COUGH

The processes of infection and recovery in whooping cough have long been puzzling. Several years ago Mishulow, Mowry and Scott¹ and later Toomey and McClelland² demonstrated that the causative organism, *Haemophilus pertussis*, produces a soluble toxic substance. On the basis of an extensive study,³ Toomey of Western Reserve University in 1936 proposed the theory^{3a} that bacteria of the virulent or "phase I" type initiate the disease in human beings and release a toxin to which the patient becomes sensitized. This sensitization was assumed to coincide with the occurrence of the characteristic lymphocytosis. "Phase I" bacilli, on injection into guinea pigs, were found more virulent than organisms recovered later in the disease;^{3c} they produced agglutinins in the blood serum of rabbits in high titers.^{3e} Yet, at the time the virulent organisms may be obtained most easily from patients, the latter suffer only from coryza. As the whoop starts and the patient becomes clinically worse, virulent organisms are found less easily, though the characteristic mucoid material which causes the whoop may be recovered in large amounts.

Toomey^{3d} acclimated *Haemophilus pertussis* to various mediums and rendered the organisms avirulent;

he was thus able for the first time to produce in vitro the tenacious mucoid material characteristic of the clinical disease. Virulent ("phase I") organisms failed to produce this mucoid substance under any condition.^{3e} These facts led the Cleveland investigator to suggest that infection and immunity in whooping cough are characterized by a dual mechanism: 1. At the beginning of the disease the patient becomes sensitized to the virulent "phase I" organisms and their soluble antigen; this is followed by gradual desensitization. 2. By the onset of the whooping stage the causative bacilli have become avirulent but at the same time produce a mucoid by-product, to which the patient must develop immunity.

Sensitization actually occurs in pertussis, as shown by the fact that antisera produced in animals by injecting virulent organisms not only do not ameliorate the clinical disease but actually aggravate it. Such sera also fail to protect infected animals.³ⁱ On intradermal injection of mixtures of antiserum and suspensions of *H. pertussis* or a culture filtrate of these organisms, the local reaction is enhanced rather than diminished. Toomey has found further that patients with whooping cough show a gradual increase in local reaction to culture filtrates of *H. pertussis*.^{3b} Thompson⁴ has recently reported that cutaneous reactions to *H. pertussis* endotoxin become definitely positive about the tenth day of the disease and subsequently increase, ultimately regressing; he has suggested that this material may be useful as a cutaneous test.

Using an ingenious technic, Galavan and Goodpasture⁵ at Vanderbilt University have reproduced in the pulmonary tissues of chick embryos lesions identical with those occurring in the human being. In addition to providing further substantial proof that *H. pertussis* is the actual cause of the disease, these investigators have found evidence, in agreement with Toomey's theory, that "the injurious effect is the result of some toxic product of the growing bacillus acting locally." More recently Sprunt, Martin and McDearman⁶ of Duke University have reported the production of lymphocytosis and interstitial pneumonia in monkeys and rabbits by intratracheal injection of *H. pertussis*. The course of the disease in these animals was found to accord with Toomey's hypothesis, with which the Duke investigators are in essential agreement.

After devising a method of obtaining in vitro the mucoid material produced by the whooping cough bacillus, Toomey investigated the possibility of hastening the development of immunity and thus recovery in patients by injecting solutions of this substance.^{3h} In a number of cases rapid amelioration of the distressing symptoms occurred. As Toomey points out,

4. Thompson, A. R.: The Intradermal Test in Whooping Cough: A Review, with a Study of 1,300 Cases, *J. Hyg.* **38**: 104 (Jan.) 1938.

5. Galavan, Mae, and Goodpasture, E. W.: Infection of Chick Embryos with *H. Pertussis* Reproducing Pulmonary Lesions of Whooping Cough, *Am. J. Path.* **13**: 927 (Nov.) 1937.

6. Sprunt, D. H., Martin, D. S., and McDearman, Sara: Results of the Intratracheal Injection of the Bordet-Gengou Bacillus in the Monkey and Rabbit, *J. Exper. Med.* **67**: 308 (Feb.) 1938.

5. Behan, R. J.: Traumatic Appendicitis, *Ann. Surg.* **85**: 263 (Feb.) 1927.

1. Mishulow, Lucy; Mowry, Isabelle W., and Scott, Eleanor B.: Pertussis Toxic Filtrates and Toxin-Vaccines: Preliminary Paper, *J. Immunol.* **19**: 227 (Aug.) 1930.

2. Toomey, J. A., and McClelland, J. E.: Pertussis Toxin or Antigen? *Proc. Soc. Exper. Biol. & Med.* **31**: 34 (Oct.) 1933.

3. (a) Toomey and McClelland.² (b) Toomey, J. A.; McClelland, J. E., and Lieder, L. E.: Further Experiments with B. Pertussis Filtrate, *Proc. Soc. Exper. Biol. & Med.* **31**: 403 (Dec.) 1933. (c) Toomey, J. A.: Statistical Analysis of Whooping Cough Cases, *J. Pediat.* **5**: 322 (Sept.) 1934. (d) Specific Factor in *H. Pertussis* Filtrate and Centrifugate, *Proc. Soc. Exper. Biol. & Med.* **32**: 527 (Dec.) 1934. (e) Toomey, J. A.; Ranta, Katherine; Robey, Lucille, and McClelland, J. E.: Phases or Types of *H. Pertussis*, *J. Infect. Dis.* **57**: 49 (July-Aug.) 1935. (f) Toomey, J. A., and Takacs, W. S.: Changes in Morphology of *Haemophilus Pertussis* Grown Under Varying Conditions and on Different Mediums, *J. Bact.* **31**: 44 (Jan.) 1936. (g) Morphology of *H. Pertussis* Grown Under Varying Conditions and on Different Mediums, *J. Infect. Dis.* **60**: 41 (Jan.-Feb.) 1937. (h) Toomey, J. A.: Newer Aspects of the Whooping Cough Problem, *J. Pediat.* **10**: 472 (April) 1937. (i) Toomey, J. A., and Takacs, W. S.: *J. Infect. Dis.* **60**: 370 (May-June) 1937.

however, definite conclusions as to the efficacy of this therapy cannot be drawn until many hundreds of cases have been treated.

These investigations of Toomey and others have now elucidated many of the perplexing clinical manifestations of whooping cough and promise to provide more effective prevention, diagnosis and treatment of this disease.

ALCOHOLIC PARALYSIS OF LOCAL IMMUNITY

Experimental pathologists are agreed that infected animals die sooner as a result of alcoholic intoxication than nonintoxicated controls. The manner in which alcoholic intoxication lowers resistance, however, has not been determined. Kenneth L. Pickrell¹ of Johns Hopkins University passively immunized a relatively large group of rabbits to pneumococci of type I and then injected each animal intracutaneously with 0.1 cc. of an eight hour pneumococcus culture. An equal number of nonimmune rabbits were used as controls.

Half of the animals of each immune and nonimmune series were intoxicated with ethyl alcohol and maintained in a stuporous condition throughout the experiment. In both intoxicated and nonintoxicated nonimmune rabbits positive blood cultures were obtained within five hours, and death occurred within eighteen hours. The nonintoxicated immune rabbits did not show a positive blood culture and all survived the infection. The intoxicated immune rabbits, however, acquired septicemia as promptly as the nonimmune controls, death taking place within twenty-four hours. Alcoholic intoxication apparently rendered these immune animals wholly nonresistant to endermic infection with pneumococci.

The presumptive mechanism of alcoholic deimmunization was deduced from a microscopic study of the lesion in and around the site of injection. In nonintoxicated animals an edematous, hyperemic and purpuric lesion occurred, particularly obvious in the nonimmune group. Microscopic examination revealed a dense leukocytic infiltrate. In the nonintoxicated immune group bacteria could not be demonstrated microscopically after the ninth hour in these leukocyte-infiltrated tissues. In the intoxicated rabbits, gross lesions did not develop in or around the site of the injection and there was practically no leukocytic infiltration, but bacteria were present in swarms in the tissues of both the passively immunized and non-immunized animals. Experiments in which the bacteria were introduced into the lungs by way of the trachea gave results quite like those of the intracutaneous experiments.

The effect of alcoholic intoxication on the activity of leukocytes was investigated in twenty-four animals. In this experiment 5 cc. of aleuronat suspension was injected into the pleural cavity. Eighteen hours later,

half of the aleuronat-injected rabbits were intoxicated. After two hours of intoxication, type II pneumococci were injected into the pleural cavity. Smears of the pleural exudate made forty-five minutes later showed abundant phagocytosis in both the intoxicated and the nonintoxicated groups. No differences in phagocytic index were noted. Differential counts in warm stage preparations showed no differences in the percentage of motile and nonmotile leukocytes in the blood streams of intoxicated and nonintoxicated rabbits. The loss of pneumococcus resistance, therefore, is presumably not due to an alcoholic injury of the leukocytes but to a local inflammatory paralysis of central or peripheral origin.

In a parallel study of the effects of ether anesthesia, the Johns Hopkins investigators showed that there was a similar local inflammatory paralysis with loss of pneumococcus resistance as a result of prolonged ether anesthesia.

Current Comment

HUMAN REQUIREMENT FOR VITAMIN C

As the result of the isolation in pure form and chemical identification of several of the vitamins, it has been possible to begin evaluation of the role of each of these substances in health and disease. Moreover, more precise knowledge of the chemical behavior of these dietary essentials has permitted the development of chemical methods for detection and quantitative measurement, methods which are invaluable substitutes for the more laborious biologic assays. It then becomes possible to apply these methods to normal and pathologic conditions and to establish definitely the relative importance of each vitamin as well as the normal requirements. Determinations of the vitamin C requirement of human beings have indicated that the necessary daily dose, for a normal adult of 70 Kg., is as high as 60 mg.¹ This quantity, corresponding to the cevitamic acid content of about 4 ounces of lemon juice, is probably excessive, judged both by the value of 20-30 mg. obtained by Göthlin² through the use of the capillary resistance test and by the recent report of Schultzer.³ The latter investigator determined the urinary excretion of cevitamic acid in a patient with scurvy of moderate severity. It was first established that the determination of the saturation point, that is, the amount of constant vitamin C ingestion which is required to produce a fairly constant excretion of this vitamin, is an incorrect approach to the problem of the minimum daily requirement, since the total quantity of cevitamic acid necessary to reach saturation may vary with the size of the daily dose. Whereas patients with scurvy studied in earlier investigations took from 7 to 14 Gm. of vitamin C over three to five weeks (several hundred milligrams daily) before they were saturated, the present report deals with a patient who received only 40 mg. a day, intravenously for twenty-three days,

1. Van Eekelen, Marie: *Biochem. J.* **30**: 2291 (Dec.) 1936.
2. Göthlin, G. F., *Skandinav. Arch. f. Physiol.* **61**: 225 (May) 1931.
3. Schultzer, Paul: *Biochem. J.* **21**: 1934 (Nov.) 1937.

1. Pickrell, K. L.: *Proc. Soc. Exper. Biol. & Med.* **28**: 265 (March) 1933.

becoming saturated after receiving a total quantity of vitamin C calculated at less than 1 Gm. From the fact that no difference was found in the time required for vitamin saturation, whether the dose of the vitamin was large or small, it is concluded that saturation tests of this kind do not offer means of estimating the reserve stores of vitamin C in the organism or of estimating the daily requirement for this vitamin. However, as 40 mg. of vitamin C injected intravenously proved to be a curative dose for a patient with moderate scurvy, it is suggested that the daily human requirement can be placed at this level or possibly less. The intravenous pathway of administration serves to eliminate complicating gastro-intestinal factors and aids in establishing more accurately the exact minimum daily human requirement, as has also been emphasized by Wright, Lilienfeld and MacLenathen.⁴ It may well be that the varying results of the different laboratories may be brought into harmony if distinction is made between actual requirement and indispensable minimum, the latter being the amount that is sufficient to prevent scurvy and the former also including that quantity of vitamin C necessary for normal functioning of all body processes which may require, or be influenced by, vitamin C. Certainly a moderately accurate statement of the exact human requirement for vitamin C can now be made when the results of all investigators are considered.

GOVERNMENT ACTIVITY AGAINST POISONOUS CONTAMINANTS

Recently the Food and Drug Administration has been issuing monthly news releases concerning its actions. Under the subheading "Other Food Seizures" (March 22) reference is made to "54 gallons and 310 small bottles of flavors and solvents containing poisonous glycols; and 515 bushels of apples carrying excessive spray residue." Similar seizures are reported also for April. Certain glycol-containing solvents for flavors (other than glycerin) have been widely used. Fortunately, the amounts ingested were small. The recent Elixir of Sulfanilamide-Massengill incident focused attention on diethylene glycol. Toxic glycols have been used in the food and drug industry, such as "Carbitol," which is the mono-ethyl ether of diethylene glycol; this apparently is more acutely toxic than diethylene glycol. The dosages containing "Carbitol" were so small that deaths apparently occurred rarely if at all. One pharmaceutical concern did market three or four preparations for therapeutic use containing carbitol; as soon as articles concerning diethylene glycol appeared in THE JOURNAL the firm promptly ceased manufacturing the drug products. The Food and Drug Administration began to trace a large number to see that they had been removed from the market. From time to time THE JOURNAL has warned against the potential harm of sprays for fruits containing lead or arsenic. The government deserves considerable encouragement in having reduced this hazard by requiring careful removal of spray residue from fruits sold in interstate commerce. The work of the Department of

Agriculture in the study of lead hazards has been hampered by the fact that the last Congress failed to provide for the adequate continuance of the work in the department. The hazard of lead cannot be attributed to any one industry or source; the possibility of lead intake should be eliminated from every source if possible. Whether the source of lead is contamination of drinking water, the increasing amount of lead of exhausts from automobiles, fruit sprays from lead solder or other sources, it is a hazard. The plan of attack should be to lessen the total intake by eliminating as far as possible the presence of lead compounds from every conceivable source.

Association News

THE SAN FRANCISCO SESSION

Special Radio Programs

Radio programs, in addition to the regular weekly broadcast *Your Health*, have been arranged in connection with the annual session of the American Medical Association in San Francisco.

Dr. J. H. J. Upham, President of the Association, will broadcast over the Red network of the National Broadcasting Company Monday, June 13, from 3:30 to 3:45 p. m., Pacific standard time. Dr. Irvin Abell, President-Elect, will broadcast over the Columbia Broadcasting System Thursday, June 16, from 5:15 to 5:30 p. m., eastern daylight saving time.

Dr. W. W. Bauer will broadcast over the Red network of the National Broadcasting Company June 16 from 12 midnight to 12:15 a. m. eastern standard time (eastern daylight saving time is four hours later than Pacific standard time; eastern standard or central daylight saving time is three hours later than Pacific standard time; central standard time is two hours later than Pacific standard time; mountain standard time is one hour later than Pacific standard time).

RADIO BROADCASTS

The American Medical Association and the National Broadcasting Company present the fifth series of network health programs, beginning Oct. 13, 1937, and running weekly through June 15, 1938. The programs are presented over the Red network each Wednesday at 12:30 p. m. eastern standard time; central standard time is one hour earlier, mountain standard time two hours earlier and Pacific time three hours earlier than eastern standard time.

In localities where daylight saving is in effect, the schedule remains the same but this brings the program one hour earlier to adjacent areas on standard time.

The dates and topics of the broadcasts for the next three "Your Health" programs are as follows:

Using Health Knowledge

- June 8—Graduation and Then What: a new phase of life begins at commencement, and health contributes to success.
- June 15—What Medicine Offers for Health: flashes from the American Medical Association meeting at San Francisco, giving highlights of medical progress.

The June 15 program closes this series of dramatizations. A new series will begin early in October.

The stations on the Red network are privileged to broadcast the program, but since it is a noncommercial program they are not obliged to do so. Interest on the part of medical societies, woman's auxiliaries and others may have weight with program directors of local stations. A personal visit to the program director might be advisable if the program is not being taken by a local station. This is an opportunity for the appropriate committees of county medical societies to indicate their interest in having this program broadcast in their community and to enlist the interest of other groups.

4. Wright, I. S.; Lilienfeld, Alfred, and MacLenathen, Elizabeth: Determination of Vitamin C Saturation, *Arch. Int. Med.* 60:264 (Aug.) 1937.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

New Health District.—The East Alabama Health District, including the counties of Bullock, Chambers, Lee, Macon, Randolph, Russell and Tallapoosa, has recently been organized with headquarters at Opelika. The new unit is the outgrowth of a field training base at Opelika, which has been conducted by the state department of health. In connection with the unit the Rockefeller Foundation has for several years sponsored a clinical research study in tuberculosis, placing particular emphasis on the incidence of this disease in a typical rural southern county and on practical methods of dealing with the problem in the absence of adequate hospital facilities. The new health district aims to serve as a practical teaching center and a demonstration area for specialistic health services. Of the population of approximately 212,000 in the area, about 100,000 persons are white and 112,000 are Negroes. The Rockefeller Foundation and the Commonwealth Fund are providing financial support for the district, the former by developing a program for the control of tuberculosis and the latter by strengthening and expanding certain other consultant and specialized services. Dr. Arthur H. Graham, formerly in charge of the Rockefeller Foundation's tuberculosis study project in Lee County, has been named medical director of the new health district. Dr. Paul W. Austin, formerly associated with Dr. Graham, will serve as tuberculosis expert. Sidney H. Morrow, D.D.S., Birmingham, is in charge of the mouth hygiene program and Dr. Harry L. Mueller, Detroit, is the pediatrician. Mr. G. S. Christopher, formerly a member of the bureau of sanitation, state department of health, will direct the sanitation program, and Miss Velma M. Owen, formerly county nurse in Walker, Limestone and Calhoun counties, will be in charge of nursing activities. Other personnel will be added later, according to the state medical journal.

ARKANSAS

State Medical Election.—Dr. Albert S. Buchanan, Prescott, was named president-elect of the Arkansas State Medical Society at its annual meeting in Texarkana April 20 and Dr. Sidney J. Wolfermann, Fort Smith, was installed as president. Other officers are Drs. Robert R. Kirkpatrick, Texarkana; Charles G. Hinkle, Batesville, and Smith W. Douglas, Eudora, vice presidents; Royal J. Calcote, Little Rock, treasurer, and William R. Brooksher, Fort Smith, secretary. The next annual session will be held at Hot Springs National Park.

Society News.—The Ouachita County Medical Society was addressed at Camden recently by Drs. James T. Robison on "Value of X-Ray in Obstetrics"; Robert R. Kirkpatrick, "Earache," and Harry E. Murry, "Hemorrhaging Ulcers of the Stomach and Duodenum." All are of Texarkana.—At a meeting of the Miller County Medical Society recently Drs. Francis Walter Carruthers and Merlin J. Kilbury, both of Little Rock, spoke on "Circulatory Diseases of the Extremities" and "Physiologic and Pathologic Sections of the Cervix and Uterus."—Dr. Maurice W. Chastain addressed the Benton County Medical Society at Bentonville, March 10, on "Diseases of the Coronary Arteries," and Emmett A. Pickens, "Diagnosis and Treatment of Coronary Thrombosis."—At a meeting of the Lawrence County Medical Society in Imboden March 8 the speakers included Dr. Wright W. Hatcher, Imboden, on undulant fever.—The Sebastian County Medical Society was addressed March 8 by Drs. Ira B. Oldham Jr. on "Traumatic Surgery of the Extremities"; Finis W. Ewing, "The Mafe Climacteric," and Edwin H. Coachman, "Diphtheria Carriers"; all are of Muskogee, Okla.

CALIFORNIA

A Harvey Evening.—The Hollywood Academy of Medicine and the Library Associates cooperated May 19 in holding a Harvey evening at the Hollywood Roosevelt Hotel. Dr. Charles N. B. Camac discussed "Social and Scientific Environment in Which Harvey Worked" and the Harvey film, illustrating his experiments, was shown.

Society News.—The Kern County Medical Society was addressed in Bakersfield May 4 by Dr. Udo J. Wile, Ann Arbor, on "Treatment of Congenital and Prenatal Syphilis."

—At a meeting of the Monterey County Medical Society in Salinas April 6 Dr. Howard E. Clark, Monterey, spoke on common diseases of the eye.—The speakers before the San Joaquin County Medical Society, Stockton, April 7, included Dr. Ernest C. Dickson, San Francisco, on coccidiosis.—At a meeting of the Alameda County Medical Association in Oakland May 16 the following spoke: Drs. Leonard Wood, on "Surgical Aspects of Ruptured Ovarian Cysts"; Harry J. Templeton, "Present Campaign Against Syphilis," and Charles A. Dukes, "Can We Improve Our Treatment of Cancer?"

COLORADO

Personal.—Dr. Charles A. Davlin, Alamosa, has been elected president of the state board of health, succeeding Dr. Paul J. Connor, Denver, who resigned from the board. Dr. Robert W. Dickson, Denver, was recently appointed a member of the board to succeed Dr. Connor.

Society News.—The historical section presented a special program before the Medical Society of the City and County of Denver May 3; the speakers were Dr. Josiah N. Hall on "Early Day Indian Troubles as I View Them" and Mr. F. H. Douglas, curator of Indian art, Denver Art Museum, "Medicine, Surgery and Obstetrics as Practiced Among the Indians." The medical society was addressed April 5 by Drs. George B. Kent and Kenneth C. Sawyer on "Treatment of Cancer of Colon and Rectum."—The Colorado Hospital Association held its semiannual meeting at the Beth-El Hospital, Colorado Springs, May 25.—The Pueblo County Medical Society was addressed in Pueblo April 5 by Drs. J. Sims Norman and Dwight B. Shaw on "Recent Developments in the Treatment of Fractures of the Extremities." The society was addressed April 19 by Dr. Casper F. Hegner, Denver, on chest surgery.—A recent meeting of the Fremont County Medical Society was addressed in Florence by Drs. Laurence E. Berg and Raynor E. Holmes Jr., Canon City, on duodenal ulcer.—Dr. Aeneas P. Cash discussed intravenous anesthesia before the Otero County Medical Society, La Junta, recently.—At a meeting of the Washington-Yuma Counties Medical Society recently Dr. William T. H. Baker, Pueblo, among others, spoke on diseases of the breast.

CONNECTICUT

Dr. Alling Retires.—Dr. Arthur N. Alling, since 1902 clinical professor of ophthalmology, Yale University School of Medicine, has retired. He has been connected with the medical school since 1893 and will now be a consultant on the staff of the New Haven Hospital after having served as an attending surgeon and ophthalmologist-in-chief since 1914. Dr. Alling graduated in medicine at Columbia University College of Physicians and Surgeons in 1891. He is the author of "Diseases of the Eye" and "Ocular Therapeutics."

GEORGIA

State Medical Election.—Dr. William H. Myers, Savannah, was chosen president-elect of the Medical Association of Georgia at its annual meeting April 29 and Dr. Grady N. Coker, Canton, was inducted into the presidency. Vice presidents are Drs. Peter B. Wright, Augusta, and William B. Schaefer, Toccoa. Dr. Edgar D. Shanks, Atlanta, was reelected secretary-treasurer. The next annual session will be held in Atlanta, May 9-12, 1939.

ILLINOIS

New Full Time Health Districts.—The state department of health announces that the following physicians have been placed in charge of the recently established full time health districts:

Dr. James A. Poling, Freeport, District 4, comprising Lee and Ogle counties.
Dr. Carl A. Peterson, Moline, district 5a, Henry and Mercer counties.
Dr. Sander Horwitz, Peoria, district 6, Marshall, Peoria and Putnam counties.
Dr. John P. Walsh, Greenview, district 11, Case, Logan and Macon counties.
Dr. Robert H. Bell, Carlinville, district 12, Calhoun, Greene, Jersey, Macoupin, Morgan, Scott and (emergency) Bond, Madison and Montgomery counties.
Dr. Nettie A. M. Dorris, Paris, district 13, Champaign, Coles, Douglas, Edgar, Vermilion counties.
Dr. Joseph L. Bryan, Xenia, district 14, Clay, Clinton, Effingham, Jasper, Marion and (emergency) Fayette.
Dr. Roy W. Harrell, P. O. Box 161, Carbondale, district 15a, Jackson, Monroe, Perry, Randolph, Washington, and (emergency) St. Clair.
Dr. Roland R. Cross, Dahlgren, district 18, Franklin, Hamilton, Jefferson, Wayne and White.
Dr. Lewis S. Barger, Golconda, district 29, Gallatin, Hardin, Johnson, Massac, Saline, Pope and Williamson counties.
It is planned to have twenty health districts in the state on a full time basis.

Chicago

Alumni Dinner.—The annual alumni-faculty banquet of the University of Illinois College of Medicine will be held at the Medinah Club June 9 at 6:30 p. m. A special feature will be the opening of the cornerstone "box" of the old college building. According to the announcement, no one living at present knows the contents. Reservations should be made with Dr. Michael H. Streicher, 1853 West Polk Street.

Experimental Center on Visual Education.—A conference on visual education and the adult May 13-14 marked the establishment of an experimental center for the development of this field at Northwestern University. Topics discussed included visual aids in industry, in community programs and in college classes, while special features included exhibits of audiovisual equipment and films publicizing the work of schools and other community projects.

Ricketts Prize Awarded to Anatomist.—Dr. John Marshall Weir Jr., formerly assistant professor of anatomy, University of Mississippi Medical School, has been awarded the Howard Taylor Ricketts Prize of the University of Chicago for his researches on the Schwartzman reaction in the lung. The prize was established in 1913 to honor Dr. Ricketts. Dr. Weir received his bachelor of science degree from the University of Chicago in 1933; he received both his degrees of medicine and of philosophy in 1937.

Chicago Tumor Institute Receives Ten Grams of Radium.—Ten grams of radium have arrived in Chicago for the Chicago Tumor Institute. The entire amount will be used in the form of a radium pack. The apparatus which has been specially designed for maximum flexibility and protection includes a system of remote electrical control as an added safeguard for the patient and personnel. The entire unit is housed in a specially constructed lead and concrete chamber. The radium was obtained from the Union Minière du Haut Katanga, Brussels. The ten gram pack which permits treatment at distances not practical with smaller quantities will be used for treatment and research with special emphasis on comparative studies between radium pack therapy and supervoltage x-ray therapy.

INDIANA

Society News.—Dr. Maurice R. Lohman, Fort Wayne, was elected president of the Indiana Tuberculosis Association at its annual meeting, succeeding Dr. Charles J. McIntyre, Indianapolis. —Russell W. Bunting, D.D.S., dean, University of Michigan School of Dentistry, Ann Arbor, discussed "The Control of Dental Caries" at a joint meeting of the Indianapolis medical and dental societies April 19. —Dr. Leslie L. Vescen, Chicago, discussed "Value of X-Ray in Urologic Diagnosis" before the Northeastern Indiana Academy of Medicine, April 28, in Kendallville. —Dr. Norman F. Miller, Ann Arbor, addressed the Fort Wayne Medical Society March 15 on "The Quality of Obstetrical Care." —Dr. Wayne R. Glock discussed hip fractures before the Academy of Medicine and Surgery in Fort Wayne recently.

Changes in the Faculty at Indiana.—The state medical journal reports, among others, the following changes in the faculty at the University of Indiana School of Medicine, Indianapolis:

- Dr. Frank F. Hutchins, professor emeritus of mental and nervous diseases.
- Dr. Max A. Bahr, professor and chairman of the department of mental and nervous diseases.
- Dr. Edgar F. Kiser, clinical professor of cardiovascular renal diseases.
- Dr. Robert M. Moore, clinical professor of cardiovascular renal diseases.
- Dr. Cyrus J. Clark, associate professor of cardiovascular renal diseases.
- Dr. Robert L. Glass, assistant professor of surgery and Huesmann fellow in neurologic surgery.
- Dr. Frederic W. Taylor, assistant professor of pathology and assistant in plastic surgery.
- Dr. Amos C. Michael, assistant professor of general pathology.
- Dr. Ko Kuei Chen, professor of pharmacology.
- Harold R. Hulpieu, Ph.D., associate professor of pharmacology and biochemistry.

The name of the department of rhinology, otology and laryngology was changed to the department of otolaryngology.

IOWA

Pediatric Meeting.—The first annual meeting of the Iowa Pediatric Club was held at the Hotel Fort Des Moines, Des Moines, April 8. The guest speaker was Dr. Julius H. Hess, Chicago, on "Chicago's Program for the Care of Premature Babies." Other speakers included Drs. Walter L. Biering, Des Moines, state health commissioner, on "The National Program on Maternal and Child Health"; Julian D. Boyd, Iowa City, "Behavior Disorders in Childhood," and Fred Moore,

Des Moines, "Nephrosis: Complicated by Pleural Effusion, Ascites, Cellulitis, Strangulated Omental Hernia and Peritonitis. Treatment: Acacia Transfusion. Recovery." A symposium on epidemic sore throat and scarlet fever was presented by Drs. Fred Sternagel, West Des Moines, Thomas E. Eyres and Harry E. Ransom, Des Moines.

Dr. Jepson Honored.—Dr. William Jepson, Sioux City, has been appointed professor emeritus of surgery at the State University of Iowa College of Medicine, Iowa City, it is reported. Dr. Jepson taught surgery at the school from 1902 to 1913. He also served as professor of surgery at Sioux City College of Medicine from 1891 to 1901. Dr. Jepson graduated at the State University of Iowa College of Medicine in 1886 and the University of Pennsylvania School of Medicine, Philadelphia, and Jefferson Medical College in 1891; he became a licentiate of the Royal College of Physicians of Edinburgh and Royal College of Surgeons of Edinburgh and Royal College of Physicians and Surgeons, all in 1897. He has been president of the state board of medical examiners, Tri-State Medical Society, Iowa State Medical Society and the Sioux Valley Medical Society.

LOUISIANA

State Medical Election.—Dr. Clarence A. Lorio, Baton Rouge, was chosen president-elect of the Louisiana State Medical Society at its annual meeting in New Orleans May 4 and Dr. Joseph A. O'Hara, New Orleans, was installed as president. New vice presidents include Drs. Cassius L. Peacock, New Orleans; Jerome E. Landry, New Orleans, and Paul D. Abramson, Shreveport; Dr. Paul T. Talbot, New Orleans, was reelected secretary. The next annual session will be in Alexandria.

Society News.—The Orleans Parish Medical Society was addressed April 25 by Drs. Erwin Wexberg on "Present State of Insulin and Metrazol Treatments of Schizophrenia"; Sydney Jacobs, "Chronicity of Tuberculosis" and Edward P. A. Ficklen, "Amebic Abscess of the Liver." The society was addressed April 11 by Drs. Clyde Brooks on "Deuteroproteose and Specified Serum in the Treatment of Pneumonias"; Manuel Gardberg, "Protamine Insulin in the Treatment of Diabetes Mellitus," and Henry Theodore Simon, "Some Fractures of the Upper Extremity."

MASSACHUSETTS

Society News.—The annual meeting of the Trudeau Society was addressed in Waltham May 17, among others, by Mr. Manfred Bowditch on "The State's Experience with Silicosis," and Dr. Francis P. Dawson Jr., "Spontaneous Pneumothorax: A Suggestion for the Treatment of Acute Symptoms." —At a meeting of the Boston Society of Psychiatry and Neurology, May 19, the speakers included Drs. Roland S. Schwab on "A Method of Measuring Consciousness in Petit-Mal Epilepsy" and Dr. Tsung-hwa Suh, "The Vascular System of the Human Spinal Cord." —Dr. Robert A. Moore, New York, discussed "Benign Enlargement of the Prostate" before the New England Pathological Society in Boston, May 19. —Dr. Frederick T. Lord, Boston, was elected president of the Massachusetts Tuberculosis League at its recent annual meeting. —Dr. Cecil K. Drinker, Boston, addressed the Massachusetts Public Health Association at its meeting April 27, among others, on "The Spread of Infections in the Respiratory Tract." —Dr. Abraham Colmes read a paper before the South End Medical Club, Boston, May 17, entitled "Simplifying the Approach to Clinical Allergy." —The William Harvey Society, Boston, was addressed May 13 by Dr. Frank H. Lahey, Boston, on "Thyroid Surgery and Thyroid Disease and Some of Its Newer Developments." Dr. John R. Fraser, Montreal, discussed obstetrics and gynecology before the society April 23.

MICHIGAN

Library Named in Honor of the Late Dr. Manwaring.—The library of Hurley Hospital, Flint, was dedicated to the memory of the late Dr. Joshua G. R. Manwaring, Flint, in a ceremony April 13. When the personal collection of Dr. Manwaring, constituting more than 1,000 volumes, was recently donated to the hospital by Mrs. Manwaring, it was decided to name the library in his honor. The unveiling of a plaque was a feature of the ceremony. Dr. Manwaring died April 17, 1934. He was a member of the House of Delegates of the American Medical Association in 1930 and at one time served as president of the Genesee County Medical Society. He was a founder of the American College of Surgeons and served on the staff of Hurley Hospital.

MONTANA

Personal.—Dr. Julio R. Soltero, Lewistown, has been reappointed health officer for Fergus County.

State Medical Election.—Dr. Harold W. Gregg, Butte, was named president-elect of the Medical Association of Montana at the meeting of the house of delegates April 26. Dr. James C. MacGregor, Great Falls, was installed as president and Dr. Thomas L. Hawkins, Helena, was reelected secretary. The next meeting will be at Butte.

NEBRASKA

District Meetings.—A meeting of the Ninth Councilor District was held in Grand Island March 31 with the following speakers: Drs. Abram E. Bennett, Omaha, on "Treatment of Syphilis"; William J. Arrasmith, Grand Island, "Surgical Jaundice," and A. F. Donaghue, Sioux City, Iowa, "Backache." Following a banquet Dr. Charles W. M. Poynter, Omaha, made an address on "The Doctor in Literature." Dr. Homer Davis, Genoa, president of the Nebraska State Medical Association, was a guest and Dr. Eugene C. Foote, Hastings, showed motion pictures of a trip to Alaska.—The Tenth Councilor District Society met at the Hastings State Hospital April 7. Papers were presented by Drs. Frederick W. Niehaus, Omaha, on "Coronary Heart Disease"; Albert H. Fechner, and Louis R. Nash, Ingleside, "Shock Treatment by Insulin and Metrazol."

NEW JERSEY

County Tuberculosis Hospital Opened.—The Hudson County Tuberculosis Hospital, Jersey City, a \$3,000,000 building with a capacity of 510 beds, was recently opened for patients. The building was begun in 1934 and completed in 1936, but installation of equipment was only recently completed. A federal PWA loan and grant amounting to \$2,996,000 financed the construction and an appropriation by the county was used for furnishings. Built on the side of a hill, the hospital is twenty-five stories high on the taller side. It is of setback construction from the seventh to the fourteenth floor, the section in which patients' rooms are located, so that each floor has a sun deck. Most of the rooms are for one or two patients and none have more than four beds. The sixteenth floor is devoted to open pavilions for air baths and to sun lamp rooms. Dr. Berthold S. Pollak is medical director of the hospital, which is part of the Jersey City Medical Center. The center now includes also a general hospital, a maternity hospital, a psychiatric hospital, a hospital for infectious diseases and a clinic building. The old hospital will be used for convalescent patients and as a preventorium for tuberculous children. Mayor Frank Hague of Jersey City laid the cornerstone of the tuberculosis hospital at a ceremony Nov. 4, 1937.

NEW YORK

Conferences on Syphilis.—The state department of health and the council committee on medical education of the Medical Society of the State of New York conducted a series of conferences on syphilis for practicing physicians. The schedule was as follows: Buffalo April 26-27, Syracuse May 18-19, Watertown May 20, Jamestown May 23, New York May 23-24, Binghamton May 24-25 and Albany May 26-27.

Society News.—Dr. Anthony C. Cipollaro, New York, addressed the Sullivan County Medical Society, Liberty, May 4 on "Diagnosis and Treatment of Tuberculosis and Allied Conditions."—Dr. Clayton W. Greene, Buffalo, addressed the Genesee County Medical Society, Batavia, April 1 on diagnosis and treatment of common heart diseases.—Drs. Edward C. Reifstein and Arthur B. Raffi, Syracuse, addressed the Madison County Medical Society, Oneida, April 14 on "The Present Status of Sulfanilamide," and "Diseases of the Thyroid Gland" respectively.

New York City

Human Death from Rabies.—A youth 17 years of age died from rabies in the Willard Parker Hospital May 18, according to the *New York Times*. This is the first death to have occurred in New York from rabies since July 1930, it was stated. The boy had been bitten on the little finger of each hand by a dog April 18.

Society News.—Dr. William H. Meyer addressed the New York Roentgen Society April 18 on "A Qualitative-Quantitative Concept of Radiation Therapy."—At a meeting of the New York Pathological Society April 28 the speakers were Drs. Andrew A. Marchetti on "Certain Types of Benign Tumors

of the Placenta"; Robert J. Parsons and Philip D. McMaster, "The Passage of Substances Through Tissues and the Formation of Lymph."—Speakers before a joint meeting of the New York Neurological Society with the section of neurology and psychiatry of the New York Academy of Medicine May 10 were Drs. Joseph H. Globus on "The Topography of a Probable Sleep-Regulating Center"; Walter O. Klingman, "Treatment of Neurogenic Megacolon by Selective Drugs," and Philip R. Lehrman, "Psychopathological Aspects of Emotional Divorce."—Dr. Simon R. Blatteis, Brooklyn, presented "An Epidemiological and Clinical Analysis of Brill's Disease" before the Medical Society of the County of Queens May 6.

Dr. Cole Receives Kober Medal.—Dr. Rufus Cole, director of the Hospital of the Rockefeller Institute since 1909, received the George M. Kober Medal for distinguished service to medicine from the Association of American Physicians at its annual meeting in Atlantic City May 4. The presentation was made by Dr. Frederick F. Russell, Boston, who commented in particular on Dr. Cole's work on pneumonia and the pneumococcus. A native of Rowsburg, Ohio, and 66 years of age, Dr. Cole graduated in medicine at Johns Hopkins University, Baltimore, in 1899. He served as assistant instructor and associate in medicine and at his alma mater from 1901 to 1909, when he became director of the Hospital of the Rockefeller Institute. He is a member of the Board of Scientific Directors of the International Health Division of the Rockefeller Foundation and in 1931 was president of the Association of American Physicians.

NORTH CAROLINA

State Medical Election.—Dr. William Allan, Charlotte, was chosen president-elect of the Medical Society of the State of North Carolina at its annual meeting in Pinchurst May 4 and Dr. James Buren Sidbury, Wilmington, was installed as president. Vice presidents are Drs. Claude B. Williams, Elizabeth City, and Millard D. Hill, Raleigh. Dr. Thomas W. M. Long, Roanoke Rapids, was reelected secretary.

Public Health Election.—Dr. Joseph A. Morris, Oxford, health officer of Granville County, was chosen president of the North Carolina Public Health Association at its twenty-eighth annual meeting in Pinchurst May 2. Dr. Avon H. Elliott, Wilmington, health officer of New Hanover County, was named vice president, and Dr. John William Roy Norton, Raleigh, assistant director of the division of preventive medicine, state board of health, secretary-treasurer.

OHIO

State Medical Election.—Dr. Parke G. Smith, Cincinnati, was chosen president-elect of the Ohio State Medical Association at its annual meeting in Columbus May 11-12, and Dr. Barney J. Hein, Toledo, was installed as president. Other officers include Dr. James A. Beer, Columbus, treasurer, and Mr. Charles S. Nelson, Columbus, executive secretary. The next annual session will be in Toledo, the date to be determined in July.

OKLAHOMA

Changes in Faculty.—At a meeting of the board of regents of the University of Oklahoma, Oklahoma City, April 4, the following promotions were approved, among others:

Dr. James Patton McGee, assistant professor of ophthalmology to associate professor of ophthalmology.

Dr. Joseph C. MacDonald, assistant professor of otorhinolaryngology to associate professor of otorhinolaryngology.

Dr. Joseph W. Kelso, assistant professor of gynecology to associate professor of gynecology.

Society News.—The Southeastern Oklahoma Medical Association held an all day session at Durant April 26; the speakers included Drs. Allen R. Russell, McAlester, on acute conditions of the abdomen as seen by the general practitioner; Elbert H. Shuller, McAlester, arthritis, and Neil D. Bue, Marlin, Texas, state and national medical legislation.—At a meeting of the Carter County Medical Society in Ardmore, April 25, the speakers were Drs. Robert C. Sullivan, Ardmore, on peptic ulcer; Fred T. Perry, Healdton, sulfanilamide; William K. Ishmael, Oklahoma City, "Physical Therapy Correlated with Medical Treatment of Arthritis," and Howard B. Shorbe, Oklahoma City, "Orthopedic Correction of the Deformed Joints in Arthritis."—Dr. Wendell M. Long, Okemah April 18 on "Practical Aids in Pelvic Examination" and Basil A. Hayes, "Changes in the Upper Urinary Tract Due to Pelvic Pathology." Both speakers are from Oklahoma City.

PENNSYLVANIA

New State Sanatoriums.—Ground was broken May 2 for the new Western Pennsylvania State Tuberculosis Sanatorium at Butler for which the state has allotted \$2,645,000. The institution will include a main hospital building, children's wing, nurses' home, employees' dormitories, medical director's residence and auxiliary buildings, and will accommodate 500 adult and fifty child patients. Recently the rebuilding of the state tuberculosis sanatorium at Mont Alto was undertaken. New buildings to replace old frame structures will include an infirmary, a children's hospital, nurses' home, dining hall and kitchen, employees' dormitory and some auxiliary buildings. There will be accommodations for 400 beds for children and 500 for adult patients. The state has appropriated \$4,765,000 for the project.

Philadelphia

University News.—The University of Pennsylvania and Swarthmore College, Swarthmore, will eventually receive the bulk of the \$200,000 estate of the late Dr. Edward Martin, Media, Pa. Relatives are to receive the income from the estate after several gifts are deducted, and after the last survivor has died three fifths of the principal goes to Swarthmore for support of the Edward Martin Biological Laboratory, given to the college by a friend of Dr. Martin. The remaining two fifths will go to the University of Pennsylvania for scholarships and fellowships in the school of medicine.

Fund to Study Arthritis.—The Bryn Mawr Fund for Investigation of Chronic Arthritis has recently been established with an anonymous gift of \$30,000. It will be used at the Bryn Mawr Hospital and the University of Pennsylvania School of Medicine and must be spent within the next three years at the rate of \$10,000 a year. According to the newspapers, the donor has indicated that if worthwhile results have been obtained at the end of the specified period he would finance a continuation of the work. The fund will be administered by a committee consisting of Dr. George D. Wagoner, Haverford, director, laboratory of research orthopedics, in the medical school; Dr. Thomas Klein of the Bryn Mawr Hospital staff and professor of clinical medicine, Temple University School of Medicine; Dr. MacKinnon Ellis of the hospital staff; Dr. Max M. Strumia, pathologist at the hospital, and Dr. George Wilson. As the first step in the application of the gift, the hospital opened a clinic on arthritis May 10 to continue every Tuesday.

TENNESSEE

Society News.—Dr. Philip C. Schreier addressed the Memphis and Shelby County Medical Society March 15 on "Functional Disorders of Menstruation" and Dr. Nicholas Gotten and Cleveland S. Simkins, Ph.D., "Spinal Cord Abscess."—Dr. James L. L. Bibb, Chattanooga, addressed the Coffee County Medical Society, Manchester, March 2 on coronary thrombosis.—Dr. Martin A. Blanton, Mosheim, addressed the Greene County Medical Society, Greeneville, March 1 on "Acute Respiratory Diseases."

Tumor Clinic at Meharry.—Dr. Heddy S. Shoulders, professor of roentgenology at Meharry Medical College, Nashville, has been appointed director of a tumor clinic to be established at the school, and Dr. John H. Hale associate director. A committee of the faculty which will be responsible for working out methods and policies includes in addition Drs. John J. Mullooney, president of the college, Edward L. Turner, William S. Quinland, Garland N. Adamson, Robert J. Warner and E. B. Cole, D.D.S. The clinic was made possible by the gift of \$20,000 from Mr. Edward S. Harkness, New York, and a fund of \$10,000 raised by the college.

TEXAS

Syphilis Among Maids.—The Dallas Syphilis Clinic under the auspices of the city health department at the Parkland Hospital recently reported that 51,000 treatments were given during 1937. A city ordinance requiring domestic servants to have routine Wassermann tests went into effect January 3. Of about 5,000 maids examined, 32 per cent were found to be infected and most of them were sent to the clinic for treatment.

Personal.—Dr. Holman Taylor, secretary, Texas State Medical Association, was the guest of honor at a testimonial banquet in Fort Worth April 8. The occasion marked his retirement as brigadier general commanding the sixty-first field artillery of the National Guard. Dr. Taylor is a member of the recently appointed Committee on Supply of Medical Service of the American Medical Association.—Dr. William N.

Powell has been elected chairman of the city health commission of Temple, succeeding Dr. Arthur C. Scott Jr., who resigned to become a director of the Brazos River Conservation and Reclamation District.

WISCONSIN

Society News.—Drs. Lindon Seed and Tell Nelson, Chicago, addressed the Brown-Kewaunee-Door Counties Medical Society, Green Bay, March 15, on "Infections of the Neck" and "Allergy in General Practice" respectively.—Speakers before the Eau Claire-Dunn-Pepin Counties Medical Society March 28 were Drs. James S. McCartney and William T. Peyton, Minneapolis, on "Postoperative Pulmonary Embolism" and "Cavernous Hemangioma and Its Treatment" respectively.—Drs. Robert L. Wilder and Oswald S. Wyatt, Minneapolis, addressed the La Crosse County Medical Society, La Crosse, March 8, on "Cryptorchidism" and "Acute Appendicitis in Children" respectively.—Dr. Frederick B. Moorehead, Chicago, addressed the Outagamie County Medical Society, Appleton, March 24, on "The Use of Elastic Traction in the Treatment of Jaw Fractures and in Plastic Surgery."

GENERAL

Two Periodicals Merge.—Announcement is made of the incorporation of the *Review of Tumor Therapy* and *Southern Surgeon*. Financial difficulties were responsible for the change, it was stated.

Meeting of Dermatologists.—The American Dermatological Association will hold its sixty-first annual meeting at the Hotel Del Monte, Del Monte, Calif., June 9-11, under the presidency of Dr. James H. Mitchell, Chicago. Among the speakers will be:

- Dr. Thomas W. Murrell, Richmond, Va., The Positive Wassermann in Spirochetal Infections Other Than Syphilis—Report of a Case.
- Dr. Hammett A. Dixon, Toronto, Ont., Melanotic Sarcoma with Extreme Melanosis.
- Dr. Clarence Guy Lane, Boston, Jaundice Occurring During the Treatment of Syphilis.
- Dr. John G. Downing, Boston, Skin Diseases of Industrial Workers: A Review of Two Thousand Claims for Compensation.
- Dr. Hiram E. Miller, San Francisco, The Chronic Granulomas in Industrial Dermatology.
- Dr. Harold N. Cole and James R. Driver, Cleveland, Manufacture of War Gases and Their Relation to Industrial Medicine.

American Radium Society.—The twenty-third annual meeting of the American Radium Society will be held at the Clift Hotel, San Francisco, June 13-14, under the presidency of Dr. Edward H. Skinner. The speakers will include:

- Dr. Leland R. Cowan, Salt Lake City, Low Voltage Lightly Filtered X-Radiation versus Radium and High Voltage in the Treatment of Superficial Cancer.
- Dr. Grant H. Beckstrand, Long Beach, Calif., Treatment of Breast Cancer and Calculations of Dosages Delivered by Radiation Therapy.
- Dr. Daniel G. Morton, San Francisco, Adenocarcinoma of the Uterine Fundus.
- Drs. William P. Healy and Robert L. Brown, New York, Experience with Radiation Therapy Alone in Carcinoma of the Corpus Uteri.

The annual dinner will be held Monday evening. Dr. Henry Schmitz, Chicago, will deliver the Janeway Lecture on "Historical Retrospect of the Treatment of Carcinoma of the Uterus" and the Janeway Medal will be presented.

Study of Internal Secretions.—The twenty-second annual scientific session of the Association for the Study of Internal Secretions will be held at the St. Francis Hotel, San Francisco, June 13-14. The following will speak, among others:

- Drs. Clarence J. Kurth and Daniel V. Conwell, Halstead, Kan., Insulin Therapy in Mental Diseases.
- Dr. Henry H. Turner, Oklahoma City, Infantilism with Congenital Webbed Neck and Cubitus Valgus.
- Warren O. Nelson, Ph.D., Detroit, The Relation of the Anterior Pituitary to the Development of the Thyroid Glands.
- Dr. Edwin C. Thompson, Chicago, The Therapeutic Use of the Sex Steroids.
- Drs. Willard C. Thompson, Fred B. Thompson, Samuel G. Taylor III and William S. Hoffman, Chicago, The Treatment of Addison's Disease with Adrenal Cortex Extract.

Fred C. Koch, Ph.D., Chicago, will deliver his presidential address at the annual dinner Monday evening on "The Control of the Gonads Over the Pituitary." Edward C. Kendall, Sc.D., Rochester, Minn., will also address this meeting on "The Role of Biochemistry in Endocrinology."

Alumni Meetings.—The alumni of Jefferson Medical College will hold a smoker at the Union League Club, 555 Post Street, San Francisco, Wednesday evening, June 15 at 9 o'clock.—A banquet and dance for members of the Phi Delta Epsilon Fraternity will be held Wednesday evening June 15 at the Concordia Club, Van Ness and Post streets, San Francisco. Reservations may be made at the registration booth of the fraternity at registration headquarters.—The alumni of Harvard University Medical School will hold a dinner at the

Palace Hotel, San Francisco, June 15; reservations should be made with Dr. William J. Kerr, University of California Hospital, San Francisco.—The Phi Beta Pi Medical Fraternity will hold a banquet in San Francisco June 15. All members of the fraternity are asked to register at the Phi Beta Pi booth at the same time they register for the convention.—Alumni of Washington University School of Medicine, St. Louis, will hold a reunion dinner at the St. Francis Yacht Club, San Francisco, June 15.

American Rheumatism Association.—The annual meeting of the American Rheumatism Association will be held at the University of California Hospital, San Francisco, June 13. The preliminary program lists the following speakers:

- Dr. Morse J. Shapiro, Minneapolis, Differential Diagnosis of Rheumatic and Nonrheumatic Muscle Pains in Children.
- Dr. Mark P. Schultz, Washington, D. C., Metabolic Factors in the Induction of Nonpurulent Carditis.
- Dr. Daniel Murray Argenive, New York, Immunological Observations on Experimental Streptococcus Arthritis in Rabbits.
- Dr. Walter Bauer, Boston, Treatment of Gonorrheal and Rheumatoid Arthritis with Sulfanilamide.
- Drs. Keene O. Haldeman and Ralph Soto-Hall, San Francisco, Neuro-pathic Joint Disease.
- Drs. Stacy R. Mettler and Charles S. Capp, San Francisco, Neurologic Symptoms and Clinical Findings in Patients with Cervical Degenerative Arthritis.
- Dr. David H. Kling, Los Angeles, The Structure and Function of Synovial Membrane.
- Dr. John Albert Key, St. Louis, Experiences with Gold Salts in the Treatment of Chronic Arthritis.
- Dr. John D. Currence, New York, Hydrotherapy in Osteo-Arthritis.

Dr. William J. Kerr, San Francisco, will deliver the presidential address on "Radiculitis Associated with Spinal Arthritis."

American Psychiatric Association.—The ninety-fourth annual meeting of the American Psychiatric Association will be held at the Hotel Fairmont, San Francisco, June 6-10. Included among the speakers will be:

- Drs. Mona Spiegel-Adolf and Herbert Freed, Philadelphia, Effect of Metrazol Convulsions on Cerebrospinal Fluids.
- Drs. C. Penfield and Edwin B. Boldrey, Montreal, Canada, The Conditioning Effect of Epileptic Seizures upon the Human Cerebral Cortex.
- Dr. Eugene Ziskind, Los Angeles, The Inadequacy of Present Day Evidence Favoring a Hereditary Predisposition in Epilepsy.
- Dr. Frederick H. Allen, Philadelphia, Homosexuality: An Attempt to Solve the Problem of Human Difference.
- Dr. Lydia G. Giberson, New York, Pitfalls in Industry for the Psychiatrist.
- Drs. Abraham Myerson, Leo Alexander and Merrill Moore, Boston, Alcoholic Avitaminosis—A Practical Plan for Prevention.
- Dr. Andrew L. Skoog, Kansas City, Mo., Bromide Intoxication Involving Brain and Skin.

Special features include an informal round table dinner meeting of the Section on Convulsive Disorders and the American Chapter of the International League Against Epilepsy and the annual dinner Wednesday evening, when Dr. Ross McC. Chapman, Towson, Md., will deliver his presidential address. There will be round table discussions and special consideration given to such topics as Psychiatric Aspects of General Medical Problems, The Juvenile Delinquent and The Adult Criminal. There will also be a symposium on psychiatric education.

Academy of Tuberculosis Physicians.—The American Academy of Tuberculosis Physicians will meet at the Mark Hopkins Hotel, San Francisco, June 17-18. Dr. Jay A. Myers, Minneapolis, will deliver the presidential address. The tentative program lists the following speakers:

- Drs. O. Jovevius Farness and Charles W. Mills, Tucson, Ariz., A Case of Fungus Coccidioides Infection Primarily in the Lung with Cavity Formation and Healing.
- Dr. John M. Nicklas, Valhalla, N. Y., The Tuberculous Child.
- Dr. James M. Odell, The Dalles, Ore., The Blood Sedimentation Rate as an Index in the Treatment of Pulmonary Tuberculosis.
- Dr. Willis S. Lemon, Rochester, Minn., The Reaction of the Tissues of the Body to Infection with Tuberculosis Bacilli.
- Dr. Harry J. Corper, Denver, Simple Methods of Growing Tubercle Bacilli with Practical Applications for the Diagnosis and Biological Preparation.
- Dr. Frederic Maurice McPhedran, Philadelphia, Normal Borderline and Certain Conditions Commonly Overlooked.
- Dr. Philip J. Hodes, Philadelphia, The Healthy Chest and the Modifying Influences of Silicosis and Silicosis with Infection.
- Dr. William Edward Chamberlain, Philadelphia, Early Cancer.
- Dr. Sherwood Moore, St. Louis, The Use and the Advantage of the Tomograph.
- Dr. Maxim Pollak, Peoria, Ill., Results of Effective Tuberculosis Control.
- Dr. Philip T. Y. Ch'iu, Peiping, China (subject not announced).

A symposium on compression therapy will also be presented by Drs. Jane Skillen, Olive View, Calif.; Jacob W. Cutler, Philadelphia; Harold Brunn, San Francisco, and Ralph C. Matson, Portland.

Special Society Elections.—Dr. Lee M. Hurd, New York, was named president-elect of the American Laryngological, Rhinological and Otolological Society at its annual meeting in Atlantic City April 27-29. Dr. Harold I. Lillie, Rochester, Minn., became president and the following were elected vice

presidents: Drs. Frederic G. Sprowl, Spokane, Wash.; Francis E. Le Jeune, New Orleans; Thomas R. Gittins, Sioux City, Iowa, and Frank E. Kittredge, Nashua, N. H.—Dr. Harold Brunn, San Francisco, was named president of the American Association for Thoracic Surgery at its annual meeting in Atlanta April 5; Dr. Adrian V. S. Lambert, New York, was elected vice president, and Dr. Richard H. Meade Jr., Philadelphia, reelected secretary. The next annual session will be in Los Angeles.—The Eastern Surgical Society, whose membership includes surgeons of Eastern states, held its annual meeting in Richmond April 22-23. Dr. John P. Bowler, Hanover, N. H., was elected president and Dr. Maxw. Harbin, Cleveland, was reelected secretary. The 1939 meeting will be in Hanover, N. H.

CANADA

Summer School Clinics.—The annual summer school clinics of the Vancouver Medical Association will be in Vancouver June 21-24. Lectures will be delivered at the Hotel Vancouver in the mornings and evenings and clinics will be held at local hospitals. The tentative program lists the following speakers:

- Dr. Ray F. Farquharson, Toronto (subject not announced).
- Dr. Andrew Hunter, Toronto, The Edinburgh School of Medicine: Historic Notes and Personal Recollections.
- Dr. Oliver Ormsby, Chicago, Precancerous Dermatoses; Cutaneous Syphilis.
- Dr. Roy Glenwood Spurling, Louisville, Ky., Low Back Pain, Painful Arm and Shoulder and Intractable Pain.
- Dr. Waltman Walters, Rochester, Minn. (subject not announced).

Canadian Medical Association Meeting.—The sixty-ninth annual meeting of the Canadian Medical Association will be held at the Nova Scotian Hotel, Halifax, June 20-24, under the presidency of Dr. Theodore H. Leggett, Ottawa. The Medical Society of Nova Scotia will act as host. Sir Humphry Rolleston, Bart., Surrey, England, will deliver the Osler Lecture, Wednesday morning, on "Osler, the Last Phase, and His Influence on Medicine." There will be symposiums on poliomyelitis and streptococcal sore throat. Physicians from the United States included on the program are:

- Dr. Alfred W. Adson, Rochester, Minn., Spinal Cord Tumors.
- Dr. Frederick C. Irving, Boston, Observations on One Thousand Preeclampsies.
- Dr. Lincoln F. Sise, Boston, The Selection of the Anesthetic.
- Dr. Emery A. Roventine, New York, Anesthetic Complications Arising from Reflex Reactions During Abdominal Surgery.
- Dr. Richard Schatzki, Boston, Gastrointestinal Diagnosis.

FOREIGN

British Medical Association.—The one hundred and sixth annual meeting of the British Medical Association will be held in Plymouth July 15-22. The scientific part of the program will be presented in seventeen sections July 20-22. Sir Robert J. Johnstone, Belfast, is president of the association and Dr. Colin D. Lindsay, Plymouth, is president-elect.

Prize for Encephalitis Research.—The University of Bern, Switzerland, directs attention to the prize of 1,000 Swiss francs offered each year for work on lethargic encephalitis that signifies real progress in the diagnosis or treatment of the disease. Those who wish to participate in the competition should send their application to the dean of the Medical Faculty, University of Bern.

Psychoanalytic Journals Cease Publication.—An importer of foreign periodicals and books has reported to these headquarters that the *Internationale Zeitschrift für Psychoanalyse* and the journal *Imago*, the official organs of the International Psychoanalytic Society, have ceased publication. The editor of both of these journals was Sigmund Freud. The *International Journal of Individual Psychology* also will suspend publication. It is planned to issue a news bulletin, which will occasionally contain an article.

Dr. Wu Lien Teh Retires.—Dr. Wu Lien Teh, for thirty years in the health and medical services of the Chinese government, recently retired to his home in Penang. Dr. Wu graduated from Cambridge University, England, and after a short period of private practice was called into service by the imperial government during an epidemic of pneumonic plague in Harbin, Manchuria, in 1910. After the epidemic Dr. Wu was made director of the Manchurian Plague Prevention Service, a position he retained until 1932. In 1930 the republican government appointed him first director of the National Quarantine Service. He was editor of the *National Medical Journal*, now the *Chinese Medical Journal*, for fifteen years. He was a founder of the National Medical Association in 1914, was its secretary the first year and was later president. He has received honorary degrees from many learned bodies, including Johns Hopkins University.

Foreign Letters

LONDON

(From Our Regular Correspondent)

May 7, 1938.

Plans for Food Control in War Time

The report of the food (defense plans) department of the Board of Trade has just been published. Plans are being prepared on the assumption that complete control of food supplies and prices may be necessary. If rationing should become necessary, every person will be supplied with a ration book entitling him to purchase certain quantities of meat, sugar and butter during specified periods. In view of the possibly serious dislocation of trade, plans are being prepared to prevent any temporary shortage of food or rise in prices. The first step would be to requisition stocks of food in the hands of merchants and cargoes on arrival at ports. In releasing stocks, priority would be given to the defense services. The food controller would make arrangements for buying oversea supplies. In the final stage of distribution the retailer, registered with his food control committee, would have delivered to him at authorized prices the weekly supplies required to meet the needs of his regular customers. Prices would be fixed. The meat canners of the country are furnishing particulars of their output and storage capacity, so that full information may be available for the coordination of the production and distribution of their products. It may be necessary to ration bacon and ham at the outset, and arrangements for this are being made with the leading importers and distributors. The possible results of an air attack in interfering with importation and distribution of supplies have given rise to plans for such a contingency. Great Britain has been divided into fifteen areas, apart from London and the home counties, for each of which a divisional officer and nucleus of a staff have been appointed. The administration of food control will be entrusted to 1,500 local authorities. Work on food storage is being done. The government has bought for storage a large supply of wheat, sugar and whale oil.

The Problem of Working in Gas-Protective Clothing

During air raids, men engaged in decontamination and other anti-gas work have to wear protective impervious oilskin clothing. This has the disadvantage of impeding the escape of heat and water vapor from the body and so producing incipient heat stroke. Recently at the Royal Society of Medicine a speaker said that he had seen strong men wearing this clothing taking part in anti-gas exercises, and they were not able to carry on for more than a few minutes, as they found themselves disabled. Attempts have been made to remove the saturated air by pumping in fresh air at one end of the suit and out at the other but the method was not practical. In the *Journal of the Royal Army Medical Corps*, Dr. G. P. Crowden of the London School of Hygiene and Tropical Medicine reports experiments on the control of body temperature during muscular work in gas-protective clothing, which have solved the problem. He discovered that if wet cloths are applied to the outside of protective oilskin garments the impending heat collapse was averted. He then tested the effect of a water-retaining garment of khaki drill worn over the single piece protective suit. He found that despite the weight of the additional clothing the loss of body heat from evaporation was continuous and that the subject was able to carry on work in a very warm environment without discomfort. Dr. Crowden next tried bringing the cooling wet surface even closer by giving a wettable external fabric facing to the protective layer, which had the advantage of limiting the required clothing to one suit. A jacket, trousers and hood made of rubber was faced externally with an absorbent fabric moistened with water. In this apparel the subject worked well.

But it seems doubtful whether it would be as effective in protection against mustard gas. Dr. Crowden's first results obtained on young laboratory assistants were so good that they were tried in an officers' training camp. It was again found that, when the outer surface of clothing is maintained wet during muscular work, accumulation of body heat is prevented, sweating is much reduced and the danger of heat collapse, even under hot summer conditions, is removed.

Traveling Fellowships in Medicine

The Medical Research Council has invited application for six Rockefeller medical fellowships. They are intended for British graduates who have had some training in research work in clinical medicine or surgery or some other branch of medical science and who are likely to profit by a period of work at a center in the United States or elsewhere abroad before taking up positions for higher teaching or research at home. The stipend will be at the rate of \$1,800 a year for a single fellow and \$2,400 for a married one. Traveling expenses and some other allowances will be paid in addition. The council also offers four research fellowships in tuberculosis, which give special opportunities to those who intend to devote themselves to research in curative or preventive treatment.

Twins Born in the Air

A race against time was lost by an air pilot who was bringing an expectant mother from the islands on the west coast of Scotland, known as the outer Hebrides, to the Glasgow Maternity Hospital. Complications had arisen in her confinement and the medical authorities asked for an air ambulance to take her to the hospital. She gave birth to stillborn twins in midair.

PARIS

(From Our Regular Correspondent)

May 4, 1938.

Extrapleural Pneumothorax

There is a tendency in Paris to attempt to replace the classic intrapleural method of artificial pneumothorax in the treatment of pulmonary tuberculosis by an extrapleural operation. At the April 1 meeting of the Société médicale des hôpitaux Dr. Pierre-Bourgeois and his co-workers, submitted a report of twenty-five cases in which the extrapleural method had been employed. Attention was called to the fact that it is a difficult surgical procedure so far as technic is concerned and that the postoperative care is much more complicated than that of the older method. One of the twenty-five patients died four days after operation, the clinical picture being that of cardiac insufficiency. In two cases an infection of the extrapleural space occurred which required a great deal of care before recovery occurred six weeks after the operation. In a fourth patient, convalescence was complicated by the formation of a bronchocutaneous fistula. In the twenty-five cases there were five failures, seven mediocre results and thirteen in which the immediate result is favorable. The indications for extrapleural pneumothorax, in the opinion of Pierre-Bourgeois and his co-workers, are recent lesions in patients below the age of 40 years. The operation should be undertaken only if the patient is in good condition, but it can be used even when the pulmonary tuberculous lesions are in a moderate state of evolution. The extrapleural method can be used simultaneously with the intrapleural, the two cavities being separately filled with air.

Dr. Léon-Kindberg stated that not enough cases of extrapleural pneumothorax had been reported to serve as a basis for an opinion of its value. It is impossible at present to say how long the extrapleural pneumothorax will last. This opinion was shared by Professor Rist. Dr. Etienne Bernard also was skeptical regarding this newer method and maintained that it should be employed only if the older intrapleural method had

not given satisfactory results. The results when the extrapleural method is used are not good if cavities with very thick walls exist. This method is contraindicated when a cavity is located close to the chest wall.

Procaine Injection and Early Mobilization of Fractures

In the *Presse médicale*, June 12, 1937, Prof. René Leriche called attention to the excellent results obtained by blocking the vasomotor reflexes which have their origin at the seat of a fracture. These reflexes, in his opinion, largely cause the pain, edema and functional disability. At the April 6 meeting of the Académie de chirurgie of Paris, Professor Leriche read a paper in which he stated that after two or three injections of a solution of procaine hydrochloride at the seat of fracture and after an interval of two or three days there is such a complete relief from pain that the patient moves the limb as if it were not fractured. Such early voluntary movements seem to be followed by consolidation at a much earlier period than when the limb is immobilized.

This method has been employed in fractures of the olecranon and patella in which there is no separation of fragments and in fractures of the condyles of the humerus. It has also given satisfactory results in fractures of the upper end of the humerus and lower end of the radius in the aged and, after reduction, in fractures of the scaphoid and clavicle. Slides were shown by Professor Leriche illustrating the ability to secure early painless movements of the shoulder joint in elderly persons with fracture of the surgical neck of the humerus.

Procaine injection and early mobilization of fractures have been employed by Professor Leriche frequently during the past ten years. This technic was first described by Dr. Albert of Liège, Belgium, following experiments on animals in 1924, but Leriche had employed it independently in the clinic since 1920.

Opening of Emergency Hospital Near Center of Paris

The number of automobiles in Paris has increased from 155,400 in 1925 to 247,000 in 1937. There has been a corresponding increase in the number of automobile accidents. In 1925 there were 160 deaths and 2,607 severely injured from this cause, as compared to 246 deaths and 1,748 severely injured in 1937.

The various public hospitals of the department of the Seine, in which Paris is situated, have twenty-nine surgical services which receive emergency cases. One of the largest of these hospitals, the Beaujon, which had been located in the center of Paris, was recently transferred to a suburb, to the only eleven story structure for hospital purposes in Europe. To take care of accident cases formerly sent to the Hôpital Beaujon, a smaller one of about 120 beds, the emergency hospital Marmottan, was opened about a year ago. As soon as first aid has been given or urgent operations have been performed, the patients are transferred to one of the larger public hospitals. The construction and equipment of the new emergency hospital complies with all modern requirements.

Cases of Syphilis Resistant to Arsenical Treatment

An inaugural thesis by Dr. F. Goulenc, who had served a four year internship at the Hôpital St. Louis, cutaneous and venereal disease center of Paris, is of interest to syphilologists. All degrees of arsenoresistance are encountered, from cases in which there is partial or complete resistance to those in which the administration of arsenical preparations appears to activate the disease. Resistance to arsenical preparations can exist alone or be associated with a similar resistance to bismuth or mercury compounds. Eighteen per cent of all patients with syphilis were found to do better when treated with nonarsenical preparations. The frequency of negative Wassermann reactions in arsenoresistant cases was striking, the test changing to a posi-

tive one when bismuth compounds, which cured the lesions, were given. Experimental studies and certain clinical observations have shown that resistance to arsenical preparations is due to a special type of spirochetes which can be differentiated from the ordinary type. One has the impression that the absence of certain changes which the arsenical preparations usually undergo in the body best explains the resistance in certain cases. In addition, other factors have a secondary part, such as inadequate phagocytic reaction and lack of formation of antibodies.

From the therapeutic point of view, when cases of arsenoresistance are encountered it is advisable to try bismuth preparations first, and then other antisyphilitic preparations such as gold salts or potassium iodide. If these do not succeed in overcoming the resistance to all drugs, one should resort to auto-hemotherapy, proteinotherapy and pyretotherapy.

Another way to overcome arsenoresistance is to give arsenical preparations in strong doses at short intervals. Small doses are apt to develop a progressive resistance, on the part of the spirochete, to arsenical preparations. Mixed treatment, i. e., the simultaneous administration of arsenic and bismuth compounds or one of these and preparations of mercury, is to be discarded in favor of alternate periods in which only one of the foregoing is given. Bismuth compounds should be given only after the patient has received a minimum of 0.9 Gm. of neoarsphenamine, whereby the results of the administration of each preparation can be judged.

BERLIN

(From Our Regular Correspondent)

April 12, 1938.

The Great Increase in Diphtheria

The fourfold increase in the German reich in the number of reported cases and deaths of diphtheria in the last ten years has given the disease an unprecedented notoriety. While no explanation is forthcoming, it is probably based on a wave-like fluctuation in incidence of the infection. The accompanying figures, based on reports of the sanitary police, show the greater morbidity of diphtheria within the last twelve years.

Occurrence of Diphtheria, 1926-1937

Year	No. of Cases	Fatal Cases
1926	30,300	1,500
1927	33,900	1,900
1928	46,900	2,700
1929	50,500	3,500
1930	70,500	4,500
1931	57,800	3,400
1932	65,400	3,300
1933	77,300	4,100
1934	119,100	5,500
1935	133,800	6,300
1936	147,000	5,600
1937	146,700	5,400

The increase since 1934 is particularly remarkable. Fortunately the disease appears to have assumed a less severe character, for the mortality has not kept pace with the morbidity. This conclusion is not altogether convincing, since medical measures can be effective even in grave cases. Morbidity has exhibited great regional variation, but the mean morbidity for the reich during the last three years was fairly consistent: 20 per 10,000 of population in 1935, 22 in 1936 and 21.8 in 1937.

The recession in the mortality of diphtheria within the last three years is a sign of the diminishing severity of the disease. It would be premature to say that the epidemic has been conquered or that the peak is past. Dr. Tornau points out in the *Deutsches Arztblatt* that the most recent data for 1938 already threaten to offset the small decline of 1937. In the current year, until February 19, a considerable increase over the corresponding weeks of 1937 has been reported. In 1935, 82.3 per

cent of diphtheria cases were among children between the ages of 2 and 14 and only 8.2 per cent were among adults over the age of 21. The campaign against diphtheria thus presents a grave problem.

The Age Distribution of the Medical Profession

The Central Organization of German Physicians has just released statistics for 1937 on the distribution of German doctors according to age. The year of birth of the youngest doctors was 1912; the oldest doctor was 97. There were nine living doctors over 90 years of age. The percental distribution

Distribution of Physicians According to Age

Age	Percentage	Age	Percentage
25-30.....	16.4	61-65.....	6.5
31-35.....	11.	66-70.....	5.1
36-40.....	14.	71-75.....	3.8
41-45.....	14.6	76-80.....	1.4
46-50.....	12.5	81-85.....	0.4
51-55.....	7.3	Over 85.....	0.1
56-60.....	6.9		

according to five year age groups is shown in the accompanying table. More than half the physicians in Germany (around 56 per cent) were between the ages of 25 and 45. The age distribution of the insurance practitioners differed from that of the profession as a whole, chiefly because young doctors who have just been licensed are not admitted to the panel practice. (About 56.2 per cent of all practitioners were eligible for panel practice.) The greater age of the insurance doctors as a group also depends somewhat on the greater time spent in special training and in general clinical training by many of them. Only 10.2 per cent were under 36 years of age; the majority (54 per cent) were from 36 to 50 years of age. Enumeration was made also of practitioners regarded as public officials and employees. In this group were included the medical officers of the defense forces. The entire number of doctors in public service was about 15,500; namely, 28 per cent of the entire profession. Doctors who held assistantships or similar posts in the medical schools came under this classification. About 70 per cent of doctors in public service were between 25 and 35 years of age and a further 20.9 per cent between 36 and 50 years of age. Accordingly, the number over the age of 50 was proportionately small (9 per cent).

Sex of the Newborn

After the World War an increase in the normal excess of newborn boys over girls was noted. The old observation that in time of war the normal excess of newborn males tends to increase was verified during the late war in every belligerent country in Europe. For Germany the rate of male excess reached a high of 108.5 boys to 100 girls in the year 1919, whereas during the years from 1876 to 1913 it had fluctuated between 105.6 and 106.6 to 100. But, although among other of the World War belligerents the ratio had resumed its peacetime norm by 1924, the prewar levels were not regained in Germany, Italy and Hungary. Dr. G. Heydel has published a study of this phenomenon in the *Allgemeines Statistisches Archiv*. He advances the following bases for the continuation of the higher proportion in Germany: 1. First of all the proportion of first born among the newborn has become larger. Infants of primiparas are more likely to be male than infants of other mothers. Substantial statistical data support this assumption. 2. The proportion of parous married women between the ages of 25 and 35 has increased. This may also be a factor in the continued high ratio; however, the data exhibit regional variation within the German reich and hence cannot be considered conclusive. 3. The number of spontaneous miscarriages has been reduced through an increase in the number of induced

abortions as well as through better facilities for advice and care of the pregnant woman. As it is precisely in spontaneous miscarriages that male fetuses greatly preponderate, the continued high ratio of boys to girls among the newborn can in part be accounted for by the fewer miscarriages.

Professor Boas Is Dead

Prof. Ismar Boas, formerly of Berlin, renowned specialist in diseases of the gastroenteric tract, died in Vienna, March 15, aged 80. He settled at Berlin in 1882 as a practicing physician. At Ewald's suggestion he came to devote himself to the study of the physiology and pathology of the digestion and in 1886 had become established as the first German physician whose practice was limited to gastroenteric disorders. His work on the diagnosis and therapy of gastric disorders has appeared in a series of German editions and has been translated into many foreign languages. His work on intestinal disorders has been widely read. The debt of specialists in this field to Boas is incalculable. One need only mention his monograph (1914) on occult hemorrhages. Named for him are Boas's point and the Ewald-Boas test breakfast. He rendered valuable service as founder and editor of the *Archiv für Verdauungskrankheiten*. Despite his advanced age, Boas had endeavored to keep active in scientific work. Since 1933 he had resided in Vienna at the home of his pupil Walter Zweig.

AUSTRALIA

(From Our Regular Correspondent)

April 11, 1938.

Proposed National Insurance for Australia

The commonwealth government of Australia in the last few years has considered proposals to introduce compulsory insurance against the financial stress of sickness and disablement, and an early introduction of the legislation is anticipated. Complete details of the proposed schemes are not yet available; British experts have delivered reports to serve as a basis, but it remains to adapt these to the Australian environment. Australian governments have provided a wide variety of social services. Great Britain, however, spends much more per head on social services than does Australia. Since the inauguration of the commonwealth there has been a steady upward movement in government expenditure, but the expenditure on social services has increased still more rapidly, as the accompanying table shows. Not only has the proportion of government expenditure on social services expanded; the proportion of social service expenditure to the national income has increased nearly threefold in a quarter of a century. If figures of expenditure from loan moneys for school building, housing and other social services were included, the upward movement would be still more striking.

The term "social services" at present includes such services as education, unemployment relief, hospitals, and old age and invalid pensions. The movement in the expenditure of pensions is interesting. In 1909, when they were instituted, the maximum pension was 10 shillings (\$2.50) a week. In 1909 there were 65,500 pensioners drawing a total of £1,500,000 (Australian currency). Today the maximum pension is £1 (\$5) a week. For the financial year 1936-1937 some 300,000 old age and invalid pensioners received a total of £14,000,000. The proportion of pensioners to total population will probably continue to grow for many years, as the decline in the growth of population brings a rising percentage into the pensioner age group. Thus every year tends to place an increasing burden on the shoulders of the remaining productive members of the community. There are no indications that the rate of increase of expenditure on social services is likely to slacken. Australia spent on social services about £5.16.0 (Australian currency) per head in 1935-1936, compared with £9 sterling per head spent by Great Britain in 1934. But part of the British expen-

diture was in the form of national insurance benefits, much of which was paid by contributions from the insured persons themselves. It seems that, if social services are to be developed in Australia, the insurance method will have to be used.

The government has sought advice in establishing social insurance on a national scale from two British officials, Sir Walter Kinnear of the Ministry of Health and Mr. Godfrey Ince of the Ministry of labor. Both have submitted reports outlining schemes which they consider suitable in Australia. The Kinnear scheme is for health and pensions insurance; Mr. Ince's is for unemployment insurance. The two schemes follow the British model in providing for contributions by employers, workers and the state. Sir Walter Kinnear's proposed scheme closely resembles that now operating in Great Britain—a compulsory contributory scheme with equal contributions by employers and workers, supplemented by a state subsidy. In return for his contribution a worker would receive the right to medical attention and sickness payments and to pension payments for himself. The scheme is designed to cover persons earning less than £365 per annum and all manual laborers. Health insurance for dependents of workers is not recommended, although friendly societies in this country are

Australian Social Provision and Total Expenditure

Year Ended June 30	Social Expenditure: (£1,000,000 Australian Currency)	Total Expendi- ture from Consolidated Revenue: (£1,000,000 Australian Currency)	Proportion of Social Expenditure to Total Expenditure from Consolidated Revenue, per Cent
1910	6.0	42.9	14.0
1914	9.5	62.0	15.3
1918	12.0	84.0	14.3
1921	18.3	139.4	13.1
1925	21.6	157.8	13.7
1930	32.5	185.2	17.5
1931	38.0	187.7	20.2
1932	39.0	179.3	21.8
1933	35.8	170.2	21.0
1934	33.6	168.4	20.0
1935	34.2	173.6	19.7
1936	37.2	179.2	20.8
1937	39.3	186.0	21.1

accustomed to provide medical benefits for both the bread winner and his dependents. The introduction of the proposed health scheme would mean a departure from the existing administrative practice of Australian governments in that voluntary private organizations would be used for the purpose of public administration. Sir Walter suggests that detailed administration of the scheme, other than medical benefits, should be in the hands of "approved societies"—mutual benefit associations of insured persons. These societies would include organizations already experienced in the administration of insurance benefits and also "any reputable body of persons" who cared to form a society. Each society would be self governing, keeping its own set of books but subject to periodic inspection. Persons to be insured under the scheme could choose their own society; societies could not reject applicants solely on the ground of age. Medical benefits would be under the direct supervision of the central department in consultation with a "medical benefits council" including representatives of insured persons, medical practitioners, chemists, local authorities and persons appointed by the minister. Certain of the benefits under the scheme would be statutory and available to all insured persons; others would be "additional"—contingent on the achievement of a good sickness and administrative record by the individual societies. Every society would be treated as a separate insurance unit, though this is inconsistent with the principle that the insurance unit should be as large as possible. The introduction of health insurance will give an opportunity

for planning a comprehensive long range scheme to promote public health. Statutory benefits already recommended in the Kinnear plan are "medical," including free medical treatment and the supply of drugs and medicines; "sickness," which is a money payment during incapacity to work through illness, and "disablement," corresponding to the present invalid pensions. While no recommendation has been made for the treatment of dependents, the welfare of women and children is so vital that a scheme which fails to care for them must be open to serious doubt. Also there are definite advantages in the inclusion of dental and optical treatment and hospital service for which insured persons might consider it worth while to pay extra. As soon as funds permit, another field is that of specialist treatment.

National Insurance for New Zealand

New Zealand is on the point of adopting a national insurance scheme. The government's social security plan was submitted this week to a special parliamentary committee for examination. Proposals for the committee's consideration are: 1. To establish a national health service to ensure for all persons ordinarily resident in New Zealand adequate medical, surgical, pharmaceutical, dental, hospital, nursing and other treatment, including a nursing domestic help service to provide skilled assistance in homes during illness. 2. To establish a national superannuation service to assure residents an adequate income when they become unable to support themselves through old age, infirmity, sickness or other disabilities or widowhood. The legislation and experimentation of the labor government in New Zealand has attracted worldwide interest. Recently Sir Henry Gullet, former minister for customs in Australia, visited New Zealand. He writes: "The government is making a very gallant effort to set up in New Zealand an economic paradise in the South Seas. No one can doubt the idealism and sincerity of the prime minister and his colleagues. Their courage is sublime, their indifference to orthodox practice and precedent magnificent. They not only bay at the moon but are completely satisfied in their own minds that already they have gone far toward reaching it."

Organization for the Control of Cancer

The ninth Australian Cancer Conference is being held in Sydney, New South Wales. More than 100 delegates from Australian universities and other bodies for the control of cancer are attending, and representatives of similar organizations in New Zealand are taking part. The increase in cancer has led to the development of a national organization directed toward the control of this disease. Treatment centers equipped to carry out investigation and treatment have been formed at the principal hospitals. Ten Gm. of radium, purchased in 1928 by the commonwealth government, has been distributed on loan to the treatment centers. Treatment is available to all irrespective of ability to pay. Cooperation is maintained between research workers, physicists and biochemists and the medical men engaged in the clinical investigation and treatment of the disease. At Melbourne University the commonwealth government maintains a radium laboratory for the production of radon for use in treatment, for the construction and repair of radium apparatus and for research into problems of treatment. During 1936 a total of 40,221 millicuries of radon was issued by this laboratory and used in the treatment of cancer and the carrying out of research. This represents an increase of 38 per cent on the output for the previous year. Local services in relation to the use of radium and x-rays have been or are being developed in the capital cities of the several states.

The Advisory Council on Nutrition

During 1935, Australian delegates to the Assembly of the League of Nations and the International Labor Conference were largely instrumental in inspiring a concerted international inquiry into worldwide problems of nutrition. Australia in

1936 appointed a commonwealth advisory council on nutrition, under the chairmanship of the director general of health and composed of experts representing health and agricultural interests, the Commonwealth Council for Scientific and Industrial Research, the university medical schools and the practicing medical and dental professions. The initial inquiries of this council were framed to enable advice to be given to the government on two principal aspects of the problem: (a) the present state of nutrition of the Australian people and (b) the nature of any evidence that the Australian people are in any degree undernourished or that their diet is improperly balanced. These inquiries have proceeded along two main lines: a survey of household dietaries in Sydney, Melbourne, Brisbane and Adelaide and a survey of the nutritional state of children in inland areas. The statistical compilation of the records obtained and parallel work of chemical analysis are being carried out by a special technical staff at the School of Public Health and Tropical Medicine, Sydney. The local organization of the inquiry has been furthered by the appointment of state committees. The two sections of the Australian population showing most markedly the effects of malnutrition are the children living in the far inland areas and the poorer sections of the community in the city.

ITALY

(From Our Regular Correspondent)

April 12, 1938.

Meeting of Gastroenterologists

The Società di gastroenterologia met at Rome under the presidency of Prof. Cesare Frugoni, medical clinician. Professor Scimone read a paper on the value of the Takata-Ara test, which he has used in 150 cases of disorders of the liver. In many instances the clinical diagnosis was confirmed by radiologic observations. If cirrhosis was present the Takata-Ara reaction was always strongly positive. The reactions were often positive in icterus based on chronic stasis of long standing, acute atrophy of the liver and destruction of the hepatic parenchyma. The author says that the Takata-Ara test, although not absolutely specific for cirrhosis, is a valuable diagnostic aid in the field of hepatopathy. The simplicity of the test justifies its widespread use. Yet the Takata-Ara reaction is inferior as a diagnostic test to some other tests; e. g., the galactose tolerance test and the rose bengal test.

Ascarelli talked on the x-ray visualization of intestinal intussusception. Ileocolic intussusception in which the cecum, uninvolved, remains intact is rather uncommon; the colocolic form is rare and only eleven cases are recorded in the entire literature. The roentgenologic examination is carried out after the administration of barium sulfate orally or by rectum. Both direct and indirect evidence of invagination may be revealed. Indirect indications of intussusception are dilatation of the segment of the bowel with peristalsis from stenosis of the lumen, non-visualization of the bowel segment that corresponds to the invaginated portion, and stasis of the barium in the upper segment of the intestine with normal filling of the distal portion. Moreover, either the intussusceptum or the intussusciens may be visualized in the roentgenogram; this constitutes direct evidence of the process. An intussusceptum appears as an arcuated, filiform image; an intussusciens is visualized as a persistent shadow in the form of a physharmonica, resulting from the retrograde accumulation of barium about the invaginated segment.

Marini submitted a study of ileocecal tuberculosis. He said that the absence from the roentgenogram of the normal shadow of the opaque meal in the ascending cecocolon, although formerly regarded as pathognomonic of specific disorders, can be encountered in various disease conditions. Accordingly, if this sign is to aid in the establishment of a more exact diagnosis it ought to be evaluated in relation to other roentgenologic data and

within the framework of the complete clinical picture. Among various circumstances that underlie this nonvisualization of the opaque meal (Stierlin's symptom, as it is called) there may be in addition to the organic lesions a nervous reflex element manifested in hypermotility and spasm. To verify the presence of Stierlin's symptom the test should be repeated several times at intervals of a few days. The barium should be administered both orally and by rectum. In cecal tuberculosis the rigidity of the ileocecal valve permits a reflux of the rectally introduced substance from the cecum into the ileum. He concludes that the Stierlin symptom, if well authenticated and if associated with other signs, permits a diagnosis of cecal tuberculosis even in previously nonsuggestive cases.

Ballatore submitted a discussion of the beneficial effects of hot and cold application to the epigastrium. He wished to determine whether the favorable influence could be traced to modifications of the gastric juice. He therefore investigated the gastric activity, using fractionated sounds, of twenty patients to whom ice bags had been applied and twenty-four patients to whom hot water bags had been applied. The induced variations in the curve of gastric secretion were observed to be slight and irregular regardless of the type of stimulus. The author therefore concluded that the therapeutic effect of the application was based on neurovascular factors.

Sebastianelli reported two rare cases of multiple cutaneous metastases transmitted by embolism. The primary disorders in these cases were respectively hypernephroma and gastric sarcoma. Metastases of this type have the following common characteristics: Men and women are equally affected, they are more likely to be manifested by persons over 40 years of age, they appear suddenly, their size varies from that of a grain of millet to that of a pigeon's egg; they are of firm consistency and may be seated in the cutis or in the subcutis. The processes are at first indolent, then undergo an extremely rapid development and may ulcerate. Their manifestation indicates an imminent fatal termination, which usually ensues within from sixty to ninety days.

Società Medico-Chirurgica

The Società medico-chirurgica of Bologna met under the presidency of Prof. Vittorio Putti. Dell'Acqua has experimented with new substances having a hypoglycemic action in the therapy of diabetes mellitus. In five normal subjects and twenty-seven diabetic patients he determined the course of the glycemic and glycosuric curves, thirty minutes and fifteen minutes following intravenous injections of 10 cc. of a 20 per cent solution of sodium dehydrocholate. Marked remission of the glycemia was noted in nearly all the diabetic subjects.

Marriages

GEORGE WINSLOW SIMPSON, Norfolk, Va., to Miss Virginia Frances Martin of South Norfolk, Va., April 7.

JACK THOMPSON FARRAR, Tullahoma, Tenn., to Miss Grace Elizabeth McKee of Faunsdale, Ala., May 1.

SOLOMON P. BIALOW, Waltham, Mass., to Miss Edith Ann Druker of Newton, at Boston, March 20.

JOHN B. ROTH, Morris, Ill., to Miss Sarah Lee Smith of Henderson, Ky., in Chicago, March 17.

EMIR ALLEN GAW, Columbus, Ohio, to Miss Elise Pumpelly Gregg of Waterbury, Conn., March 19.

JOHN KELLER OWEN, Charlottesville, Va., to Miss Frances Marshall Baker at Alexandria, May 7.

JAY E. HOULAHAN, Mason City, Iowa, to Miss Beulah Sanders of Creston, March 1.

JOHN H. SCHARF, New York, to Miss Thelma Bogart of Chicago, March 20.

VICTOR C. TILLMANNS to Miss Tone Kammann, both of Los Angeles, March 5.

Deaths

John Jacob Abel, professor emeritus of pharmacology at Johns Hopkins University School of Medicine, Baltimore, died, May 26, in the Johns Hopkins Hospital, aged 81. Dr. Abel was born in Cleveland, May 19, 1857. He was educated at the University of Michigan and Johns Hopkins University, and received the medical degree from the Université de Strasbourg Faculté de Médecine in 1888. He was lecturer and professor of materia medica and therapeutics at the University of Michigan from 1891 to 1893, when he joined the faculty of Johns Hopkins University in Baltimore as professor of pharmacology, holding the position for almost forty years, until he became professor emeritus in 1932. Dr. Abel had been director of the Laboratory for Endocrine Research at Johns Hopkins since 1932. He founded and was editor of the *Journal of Pharmacology and Experimental Therapeutics* from 1909 to 1932. He was president of the American Association for the Advancement of Science in 1932 and a member of the Association of American Physicians, the American Physiological Society, the Society for Pharmacology and Experimental Therapeutics and the American Chemical Society; honorary member of the Chinese Physiological Society, the Society for Biology (Buenos Aires) and the Pharmacological and Physiological Societies of Great Britain. The Chicago section of the American Chemical Society awarded Dr. Abel the Willard Gibbs Gold Medal for 1927. The choice was made by a jury of twelve chemists from the country at large, and Dr. Abel received a majority of votes cast on the first ballot. Dr. Abel's research was largely in the field of glandular extracts; his work made it possible to isolate epinephrine in pure crystalline form. He and his associates were the first to isolate insulin in crystalline form. He also was awarded the Research Corporation prize in 1925, the gold medal of the Society of Apothecaries, London, 1928, the Philip A. Conné medal of the New York Chemists' Club, 1932, and the Kober medal, 1934. He delivered the first Kober Lecture sponsored by the Kober Foundation under the auspices of the Association of American Physicians in 1925. Dr. Abel had been given honorary degrees by various universities and had been made a member of many other scientific organizations in this country and abroad. In 1927 he was further honored when the Chemical Foundation of New York granted to Johns Hopkins University about \$210,000 for an extensive research investigation on the cause and treatment of the common cold. The foundation requested that this fund be named the John Jacob Abel endowment for research.

Allen Buckner Kanavel ♂ professor of surgery at Northwestern University Medical School, Chicago, was killed, May 27, in an automobile accident near Mojave, Calif., aged 63. Dr. Kanavel was born in Sedgwick, Kan., Sept. 2, 1874. He received his bachelor of philosophy from Northwestern University in 1896, medical degree cum laude in 1899, and later studied abroad. In 1901 he was instructor of clinical surgery, assistant professor of surgery from 1908 to 1917, associate professor from 1917 to 1919 and since 1919 professor. He was chairman of the Section on Surgery, General and Abdominal, from 1930 to 1931, of the American Medical Association; past president, a regent and fellow of the American College of Surgeons; a member of the American Surgical Association, Western Surgical Association, Society of Clinical Surgeons and the Society of Neurological Surgeons. During the World War he served as a major in the medical corps and later was made a colonel. He was attending surgeon to the Wesley and Passavant hospitals in Chicago. Dr. Kanavel was the editor of *Surgery, Gynecology and Obstetrics*, a contributor to "Keen's System of Surgery," and to "Ochsner's System of Surgery" and to the periodical literature. He was the author of the well known book, "Infections of the Hand." In 1924 he received the honorary degree of doctor of science from Northwestern University.

Robert Tait McKenzie ♂ formerly director of the department of physical education at the University of Pennsylvania School of Medicine, Philadelphia, also a noted sculptor, died, April 28, of heart disease, at his home in Philadelphia, aged 70. Dr. McKenzie was born in Almonte, Ont., Canada, May 26, 1867. He received the degree of doctor of medicine in 1892 from McGill University, Montreal, Que. In 1895 he was house physician to the Governor General of Canada. From 1895 to 1904 he was demonstrator, then lecturer of anatomy, and from 1896 to 1904 he was medical director on physical training at his alma mater. He delivered the Olympic lectures at St. Louis in 1904, and from 1904 to 1930 was professor and director of the department of physical education at the University of Penn-

sylvania. During the World War he was commissioned temporary major in the Royal Army Medical Corps. Dr. McKenzie was particularly noted for portraits and medals in bas-relief, statues of athletes and memorials of the World War. He was the sculptor of the Franklin Statue at the University of Pennsylvania, the Scottish-American War Memorial at Edinburgh and the War Memorial in the Parliament Building at Ottawa. In 1912 he was awarded a silver medal from the king of Sweden for his bronze medallion "The Joy of Effort," fashioned in commemoration of the Olympic games at Stockholm, Sweden. He was the author of "Exercise in Education and Medicine," "Treatment of Convalescent Soldiers by Physical Means," "Reclaiming the Maimed" and was the editor of a series of textbooks on physical education.

Daniel H. McCalman, Winnipeg, Man., Canada; Manitoba Medical College, Winnipeg, 1899; in 1902 became professor of hygiene at his alma mater, in 1905 lecturer in obstetrics, and in 1907 professor of obstetrics, a post which he held for twenty years, then becoming professor emeritus; in 1905 was appointed obstetrician to the Winnipeg General Hospital and resigned in 1922, when he was appointed a member of the honorary consulting staff; formerly chairman of the provincial board of health; past president of the Manitoba College of Physicians and Surgeons; in 1930 became a member of the Sanatorium Board of Manitoba; aged 76; died, March 5, of cerebral hemorrhage.

Arthur Aloysius O'Neill ♂ San Francisco; Cooper Medical College, San Francisco, 1891; assistant clinical professor of medicine, emeritus, Stanford University School of Medicine; past president of San Francisco County Medical Society; assistant surgeon, Cooper Medical College Clinic, 1893; assistant in diseases of the skin, San Francisco Polyclinic, 1902-1907; in charge of Isolation and Plague Hospital, 1907-1910, of Isolation Hospital, 1912-1917; assistant, U. S. Public Health Service Laboratory, 1910-1912; formerly city physician; surgeon, U. S. Public Health Service, reserve and later consultant, communicable diseases; aged 68; died, March 2.

Francis Asbury Hulst ♂ Greenwich, N. Y.; Syracuse University College of Medicine, 1904; formerly instructor in bacteriology and pathology at his alma mater; at one time pathologist for the Brooklyn, Methodist Episcopal, St. Catherine's, St. Mary's and St. Christopher's hospitals, Brooklyn; for several years served as medical examiner for the city schools; aged 60; died, March 13, in the McClellan Hospital, Cambridge, of lobar pneumonia and arteriosclerotic heart disease.

Ernest Alexander Hunt, Des Moines, Iowa; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898; member of the Iowa State Medical Society; on the staff of The Retreat; formerly on the staff of the Winnebago (Wis.) State Hospital; aged 62; died, March 4, of uremia, following an operation for carcinoma of the bladder.

John Donaldson Porterfield Jr., Cape Girardeau, Mo.; Rush Medical College, Chicago, 1897; fellow of the American College of Surgeons; formerly member of the board of education; on the staff of St. Francis Hospital; served during the World War; aged 61; died, March 10, in the Veterans Administration Facility, North Little Rock, Ark., of cerebral hemorrhage.

John Clarence Knight, Plant City, Fla.; University of Nashville (Tenn.) Medical Department, 1900; member of the Florida Medical Association; for many years health officer of Plant City; served during the World War as a member of a draft board; past president of the Hillsborough County Medical Society; aged 66; died, March 6, of coronary thrombosis.

William Henry Jacob, Paterson, N. J.; Columbia University College of Physicians and Surgeons, New York, 1902; member of the Medical Society of New Jersey; formerly member of the board of education; fellow of the American College of Surgeons; on the staff of St. Joseph's Hospital; aged 58; died, March 2, of illuminating gas poisoning.

George Hamilton Jenkins, Binghamton, N. Y.; New York Homeopathic Medical College and Hospital, New York, 1889; member of the Medical Society of the State of New York; fellow of the American College of Surgeons; consultant to the Binghamton City Hospital; aged 76; died, March 26, of cerebral sclerosis and bulbar paralysis.

Daniel Morton ♂ St. Joseph, Mo.; University of Louisville (Ky.) Medical Department, 1887; member of the American Proctologic Society; fellow of the American College of Surgeons; surgeon to the Missouri Methodist Hospital and proctologist to the welfare board of State Hospital number 2; aged 73; died, March 14, of septicemia.

John Daniel Kerr • Clinton, N. C.; University of Maryland School of Medicine, Baltimore, 1908; member of the county board of health; formerly county health officer; served during the World War; aged 53; died, March 16, in the James Walker Memorial Hospital, Wilmington, of injuries received in an automobile accident.

Hubbard Kavanaugh Hinde • San Angelo, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1915; fellow of the American College of Surgeons; member of the staffs of the Shannon West Texas Memorial Hospital and St. John's Sanitarium; aged 46; was killed, March 18, in an automobile accident.

Francis Irving Nettleton • Shelton, Conn.; Yale University School of Medicine, New Haven, 1897; past president of the Fairfield County Medical Society; formerly city health officer and mayor of Shelton; on the staff of the Griffin Hospital, Derby; aged 63; died, March 19, of cardiorenal vascular disease.

Miron Isaac Marsh • Cedarville, Ohio; Medical College of Ohio, Cincinnati, 1895; past president of the Greene County Medical Society; vice president of the board of trustees and for many years member of the board of trustees of Cedarville College; aged 72; died, March 20, of heart disease.

Leon A. Jacobus • Winfield, Kan.; College of Physicians and Surgeons of Chicago, 1893; aged 70; on the staffs of the William Newton Memorial Hospital and St. Mary's Hospital, where he died, March 20, of adenocarcinoma of the rectum, with obstruction and diverticulosis of the colon.

Leon Wade Martin • Chicago; University of Illinois College of Medicine, Chicago, 1917; associate in obstetrics and gynecology at his alma mater; served during the World War; on the staff of St. Joseph's Hospital; aged 47; died, March 6, of aplastic anemia and bronchopneumonia.

Louis H. Kirk, Austin, Texas; University of Texas School of Medicine, Galveston, 1903; member of the State Medical Association of Texas; on the staff of the Texas Deaf, Dumb and Blind Institute; aged 60; died, March 22, of acute dilatation of the heart, emphysema and pneumonia.

Curtis L. Lyon, Charleston, W. Va.; College of Physicians and Surgeons, Baltimore, 1915; member of the West Virginia State Medical Association; aged 64; died, March 20, in the Charleston General Hospital of carcinoma of the sigmoid with perforation and peritonitis.

Francis Abraham Longaker, Olympia, Wash.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1906; member of the Washington State Medical Association; served during the World War; mayor of Olympia; aged 57; died, March 5, of coronary disease.

Frank Hubert Jett • Terre Haute, Ind.; Columbian University Medical Department, Washington, D. C., 1905; fellow of the American College of Surgeons; on the staff of the Union Hospital; aged 61; died, March 13, in St. Anthony's Hospital, of bronchiectasis.

Claude Edward McDermid • Niagara Falls, N. Y.; Georgetown University School of Medicine, Washington, D. C., 1908; on the staffs of the Memorial Hospital and Mount St. Mary's Hospital; aged 52; died, March 12, of coronary occlusion.

Samuel Meredith Janes, Marquette, Mich.; Hahnemann Medical College of the Pacific, San Francisco, 1888; Illinois Medical College, Chicago, 1902; aged 76; died, March 12, in the New Britain (Conn.) General Hospital of cerebral hemorrhage.

William Matthew Raymond, Pickwick Dam, Tenn.; Washington University School of Medicine, St. Louis, 1930; member of the Medical Association of the State of Alabama; aged 31; died, March 30, of a self-inflicted bullet wound.

Leonard Aaron Jaslow, New York; Eclectic Medical College of the City of New York, 1907; member of the Medical Society of the State of New York; served during the World War; aged 57; died, March 5, of cerebral hemorrhage.

Isaac William Howard, Maysville, Ala.; Memphis (Tenn.) Hospital Medical College, 1898; member of the Medical Association of the State of Alabama; aged 68; died, March 19, of coronary thrombosis, myocarditis and arteriosclerosis.

Thomas Lafayette Higginbotham, Creelsboro, Ky.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1906; aged 58; died, March 4, in Jamestown of cerebral hemorrhage.

Edward Loomis Pratt • Winsted, Conn.; University of the City of New York Medical Department, 1884; aged 79; on the staff of the Litchfield County Hospital, where he died, March 4, of prostatic adenoma.

Clarence C. Perry, West Rutland, Vt.; Dartmouth Medical School, Hanover, N. H., 1877; member of the Vermont State Medical Society; aged 88; died, March 22, in the Rutland Hospital of pneumonia.

Prince Albert Meneray, Santa Rosa, Calif.; Kentucky School of Medicine, Louisville, 1891; member of the California Medical Association; county health officer; aged 79; died, March 1.

John Crawford Hall, McPherson, Kan.; Kansas City (Mo.) Medical College, 1887; member of the Kansas Medical Society; aged 79; died, March 21, of heart block and arteriosclerosis.

Thomas E. Hughes, Camden, N. J.; Medico-Chirurgical College of Philadelphia, 1907; member of the Medical Society of New Jersey; aged 55; died, March 6, of coronary thrombosis.

Selig Clifton Frost, Memphis, Tenn.; University of Tennessee Medical Department, Nashville, 1899; aged 60; died, March 11, in the Baptist Hospital of carcinoma of the larynx.

Clarence Andrew Kerner, Phoenix, Ariz.; Milwaukee Medical College, 1910; formerly connected with the Indian Service; aged 58; died, March 4, of cerebral hemorrhage.

A. H. Jones, Whitewater, Ind.; Curtis Physio-Medical Institute, Marion, 1894; aged 68; was drowned, March 7, in the Gulf of Mexico off Brandenton, Fla., while fishing.

Edward Ebby Hethcock, Los Angeles; National University of Arts and Sciences Medical Department, St. Louis, 1917; aged 51; died, March 11, of cerebral hemorrhage.

Francis Marion Crume, Lamy, N. M.; University of the South Medical Department, Sewanee, Tenn., 1901; aged 74; died in March when struck by an automobile.

Charles A. Lenhard, Detroit; Detroit College of Medicine, 1890; member of the Michigan State Medical Society; aged 78; died, March 11, of chronic myocarditis.

Malcolm Thomas Moore, Sullivan, Ill.; College of Physicians and Surgeons of Chicago, 1885; aged 80; was killed, March 29, when struck by an automobile.

William Marion Powell, Atlanta, Ga.; Atlanta Medical College, 1883; aged 79; died, March 29, in a hospital at Charlotte, N. C., of prostatic hypertrophy.

Clarence H. S. Henderson, Greenwood, S. C.; Leonard Medical School, Raleigh, 1903; aged 61; died, March 11, of heart disease and pulmonary abscess.

Merton Carl Moss, St. Louis; St. Louis University School of Medicine, 1920; aged 41; died, March 20, in the Alexian Brothers' Hospital of pneumonia.

Owen William O'Neil, Mooers Forks, N. Y.; Baltimore Medical College, 1897; aged 65; died suddenly, March 10, of heart disease and gastric ulcer.

Arthur George Rawlings Nichol, New York; Bellevue Hospital Medical College, New York, 1897; aged 68; died, March 3, of arteriosclerosis.

Benjamin B. Peters, Christiana, Del.; Jefferson Medical College of Philadelphia, 1884; aged 75; was found dead, March 25, of a gunshot wound.

Henry William Hand, San Diego, Calif.; Bellevue Hospital Medical College, New York, 1890; aged 77; died, March 21, of diabetes mellitus.

Ernest Lee Hutchison, England, Ark.; Kansas City (Mo.) College of Medicine and Surgery, 1919; aged 54; died, March 3, of angina pectoris.

Frank Joseph Bedrick Kalal, Clarkson, Neb.; John A. Creighton Medical College, Omaha, 1901; aged 65; died, March 3, of angina pectoris.

Hugh Joseph McGee • Buffalo; University of Buffalo School of Medicine, 1907; aged 60; died, March 17, of coronary sclerosis.

R. Adlington Newman, Detroit; Detroit College of Medicine, 1889; aged 77; died, March 9, in the Harper Hospital of pneumonia.

Charles Andrew Moore, Springfield, Mo.; St. Louis College of Physicians and Surgeons, 1892; aged 72; died, March 7.

William Robert McCutcheon, Thorp, Wis.; Rush Medical College, Chicago, 1884; aged 80; died, March 19, of senility.

Albert LaFayette Johnson, Knoxville, Tenn.; Tennessee Medical College, Knoxville, 1893; aged 68; died, March 29.

Alfred A. McBrien, Arcadia, Calif.; St. Louis College of Physicians and Surgeons, 1898; aged 70; died, March 9.

Bureau of Investigation

MIDOL

The Product Is Changed, But the Name Remains

When one buys a "patent medicine," one buys a *name* and not a *thing*! The thing may change overnight, but the name, like Tennyson's brook, goes on forever. The "patent medicine" manufacturer builds up a property value, not in the *thing* that he puts out, but in the trade-marked name that he gives to his product. Should it be commercially expedient to change completely the composition of a "patent medicine," the average manufacturer of such products will not hesitate to make the change. But the public will be none the wiser until some independent investigator records the fact.

A "patent medicine" called "Midol" has been on the market for many years. It was one of the first of the nostrums sold direct to the public to depend, for its action, on the presence of aminopyrine, which was put on the market for physicians' use under the proprietary name "Pyramidon."

In THE JOURNAL, Aug. 10, 1912, the A. M. A. chemists showed that Midol depended essentially on Pyramidon (aminopyrine) for its therapeutic effect and contained, also, a small quantity of caffeine. The article commented that now that Pyramidon was being used as a "patent medicine," it was "probable that its toxicology will become better known." The prophecy has long since come true. To quote from New and Nonofficial Remedies (1938):

"Aminopyrine appears to produce serious and sometimes fatal granulocytopenia, especially in susceptible individuals . . . It should not be administered in large doses or over a long period of time unless repeated leukocyte and differential counts are made at regular intervals. *The drug should not be used in the treatment of dysmenorrhea or for any other purpose at or near the menstrual period.*" [Italics ours.—Ed.]

Yet Midol has been featured for many years past as "especially for the relief of functional menstrual pain and discomfort"! In spite of the fact that the dangerous potentialities of aminopyrine have been known for some years past, Midol continued to contain this drug.

In December 1936, the Food and Drug Administration seized a quantity of Midol, declaring that it was misbranded under the act. The manufacturers put up no defense, and in January 1937 the court entered judgments of condemnation and ordered that the seized product be destroyed. Notice of Judgment No. 26992, issued in July 1937, which described this case, stated that Midol contained a little less than 5 grains of aminopyrine and a little more than one third of a grain of caffeine to each tablet. The Notice of Judgment opened with this statement:

"This product was represented to be a safe and an appropriate remedy and to be harmless, non-narcotic, and non-habit-forming. Examination showed that it contained a drug that was deemed to be dangerous, which had narcotic or sleep-producing properties, and which might be habit-forming. The labeling also bore false and fraudulent curative and therapeutic claims."

The Federal Trade Commission in May 1937 reported that the General Drug Company, which puts out Midol, had entered into a stipulation with the Commission to discontinue certain false and misleading representations concerning the therapeutic value of Midol.

Another Notice of Judgment issued in April 1938 also declared that Midol seized in September 1937 still contained approximately 5 grains of aminopyrine to each tablet. It declared, also, that the packages still represented that Midol was a safe and appropriate remedy for the relief of functional menstrual pain and discomfort, headache and neuralgia, whereas, the government declared, "the article was not a safe and appropriate remedy when used as directed for the relief of such ailments, but was a dangerous drug." Here again the General Drug Co. made no defense and the court once more entered judgment of condemnation and ordered the seized product to be destroyed.

In 1937 the Bureau of Investigation of the American Medical Association was notified by an organization devoted to honesty

in advertising that the formula for Midol had been changed. A specimen of Midol was purchased on the Chicago market and subjected to tests in the A. M. A. Chemical Laboratory, which reported that aminopyrine still seemed to be the chief ingredient.

On April 20, 1938, the Bureau of Investigation wrote to the General Drug Company, stating that for some years the Bureau had been reporting to those who inquired about the product that Midol contained, for its essential drug, aminopyrine with small amount of caffeine, but that as it had been suggested that Midol no longer contained aminopyrine, the General Drug Company was asked whether it cared to state just what its present composition of Midol might be. On April 29 the General Drug Company replied:

"We are indeed pleased to reply to your letter of April 20th and to have an opportunity to advise you that Midol as now constituted does not contain aminopyrine."

"We will greatly appreciate your further assistance in passing this information along to interested parties who may inquire of you regarding our product."

This letter was acknowledged by the Bureau of Investigation, which expressed regret that the General Drug Company, while admitting that the composition of its product had been changed, and equally willing to say what their product did *not* contain, did not see fit to state what the new product *did* contain. No reply to this letter has been received.

A specimen of Midol was purchased on the open market in eastern Pennsylvania and submitted to the A. M. A. Chemical Laboratory for analysis. The chemists now report that tests indicate that these Midol tablets no longer contain aminopyrine but do contain caffeine and appear to have, for their most active ingredient, acetylsalicylic acid—*aspirin*!

The trade package of the new aspirin-containing Midol is identical with trade packages previously issued of aminopyrine-containing Midol. In other words, the public is given no information regarding the fact that the composition of Midol today is entirely different from the composition of Midol a year or so ago. When you buy a "patent medicine," you buy a name and not a thing.

When will public opinion demand a national law that will require manufacturers of "patent medicines" to declare the names and amounts of all drugs in their mixtures for which they make therapeutic claims?

Correspondence

ORAL IMMUNIZATION IN ALLERGY

To the Editor:—Ever since hypodermic medication has been used as substitution or immunization therapy, attempts have been made to replace it by oral administration. Naturally this should be our aim, since the ease of administration, lack of pain and possibly lower cost would make oral therapy more desirable. Oral immunization thus far with the majority of vaccines and specific antigens has not been accepted as successful. One of the newest forms of specific therapy of that type includes pollen. While some reports relative to the use of pollen orally were published fifteen years ago, in the last year or two the greatest attention has been given it. Several papers have dealt with the efficacy of pollen administered orally. One of the objections to the reports is that almost all of them concern territory which is essentially free from our major and most serious cause of hay fever—ragweed. The favorable papers deal mainly with parts of Arizona, the Northwest and Europe. Several workers in the Central states area have thus far found this method to yield poor results. In about one third of the cases unpleasant gastrointestinal upsets have occurred when moderate doses of pollen were taken by mouth. Tests on absorption conducted by some members of the Chicago Society of Allergy would indicate that ordinarily only a small and ineffectual fraction of the pollen antigen is absorbed from the gastrointestinal tract.

These facts will eventually come to light in authentic and reliable medical periodicals. Much experimentation will have to be done before such a method can be given approval. There

would be no need for the present communication were it not that attempts are being made at premature commercialization of this form of therapy. Several pharmaceutical houses have placed oral preparations of pollen on the market. Their claims are far from conservative and they fail to point out the dangers of this type of treatment. The enthusiastic and unrestrained tenor of this advertising literature will permeate the consciousness of the general medical profession and before long the general public. The Chicago Society of Allergy feels that it is its duty to sound a note of warning not only because of the probable numerous disappointments but also because of the possible dangers inherent in any new and unproved method of treatment. It is suggested that the average practitioner would be wise to postpone any intended change from hypodermic to oral pollen therapy until the method has been given thorough trial under the experienced eyes of allergists in the large allergy clinics of this country.

THE CHICAGO SOCIETY OF ALLERGY
M. R. LICHTENSTEIN, M.D., Chicago, Secretary.

BLOOD TRANSFUSION

To the Editor:—In the April 2 issue of *THE JOURNAL*, page 1113, in the editorial "A New Source of Blood for Transfusion," appears the statement that "the blood grouping corresponds always to that of the mother's blood."

In this connection I wish to mention an observation made while I was an intern at the Methodist Episcopal Hospital in Brooklyn.

While grouping and crossmatching the blood of 100 parturient women with their respective placental bloods. I found that the placental blood had sharp isoagglutination properties, as the editorial states, but that this grouping did not always correspond to that of the mother's blood.

It was found that the mother bore the relation of "universal donor" for her child, or that, whatever the respective groups, the serum of the placental blood never agglutinated the cells of the mother's blood, while the mother's serum always agglutinated the cells of her own placental blood when the previous grouping with known serum had shown these cells to have agglutinogens to the agglutinins in the mother's group.

This work was not continued beyond the number of 100 when it was found that the same work had been done and published from the Brooklyn Jewish Hospital a few years previously, with identical results, from examinations of 500 cases. This work in Brooklyn Jewish Hospital was done about 1926-1929.

T. D. SLAGLE, M.D., Coamo, P. R.

EPIDEMIC DIARRHEA OF THE NEWBORN

To the Editor:—The discussions of epidemics of diarrhea in the newborn in *THE JOURNAL* have emphasized rooms, equipment and the like whereas procedure is of paramount importance. These epidemics cannot be prevented unless all attendants in a newborn service see the necessity for an asepsis closely analogous to that of an operating room.

How are these infections introduced into each infant and how transferred from infant to infant? Obviously they enter an infant's mouth—or possibly the adjacent nose. They would be expected to come from a common source or from a previous case. A mother's nipple may contaminate one baby but cannot directly cause an epidemic unless she nurses more than one. One is reduced to two probable methods of introduction of contaminating material:

1. Droplets from attendants. This source may be prevented by proper masks, properly worn.

2. Infected bottle nipples. The bottle nipple, from the time it is sterilized until it is finally taken from the baby, should be touched by nothing except the baby's mouth and a sterile gloved hand or forceps.

W. D. LUDLUM, M.D., Brooklyn.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

TRAUMA AND APPENDICITIS

To the Editor:—Can acute or subacute appendicitis be brought on by injury, such as a fall from the stairs? M.D., New York.

ANSWER.—At the present time one cannot say definitely that inflammation of a previously healthy appendix can be brought on by an injury, but there is considerable evidence to indicate that it may be a factor in aggravating a previously existing inflammation. Perforation of an otherwise healthy appendix has been found at operation by Sabawala (quoted by Royster, H. A.: *Appendicitis*, New York, D. Appleton & Co., 1927) immediately following a horse kick. Osler (quoted by Royster) in 1899 stated that trauma played an important part, since symptoms had been observed following a fall or a blow in a number of cases. Ludington (quoted by Royster) favored the opinion that mechanical injury may excite an acute attack of appendicitis. Because of the last two authorities the supreme court of Washington has held appendicitis to have been caused by a blow. In fifty cases of so-called traumatic appendicitis Kelly (quoted by Sloan, H. G., in Lewis, Dean: *Practice of Surgery*, Hagerstown, Md., W. G. Prior Company) found a history suggestive of antedating appendical disease in 80 per cent.

Since 1830, when Goldbeck (quoted by Royster) reported a necropsy on a boy following perforation of a gangrenous appendix with symptoms eight days after a fall from a wagon, trauma has been considered as a possible exciting cause of appendicitis. The recurring pressure of a tool handle has also been given as an etiologic factor. In no instance can one be sure of the previous condition of the appendix preceding an injury or eliminate a possible coincidence.

Mechanical and anatomic changes in the appendix are frequent and predispose to inflammation. These may be due to developmental errors resulting in varying grades of bands, strictures, kinks, adhesions, torsion or traction but may also result from overlooked attacks of inflammation, the development of foreign bodies and from physiologic or mechanical changes in the adjacent structures.

It has been held debatable whether the appendix can be injured directly by a blow from without, except rarely when compressed against bone as other parts of the intestine when it may be injured without visible evidence on the abdominal wall.

Royster (*Appendicitis*, p. 53) believed that increased pressure within the appendix following trauma is the usual mechanism of producing inflammation. Sloan (in Lewis: *Practice of Surgery*, vol. 7, chapter 3, p. 2) stated that the swelling incident to trauma is an important cause but that grossly and microscopically the pathologic condition is not to be differentiated from that arising spontaneously.

NAIL POLISHES AND LACQUERS

To the Editor:—I am interested in the public health and medicolegal aspects of certain cosmetics, in particular the nail polishes or lacquers. I understand that the common base for these nail lacquers is ethyl acetate or some similar product and, in addition, talc and pigments. Have any toxicologic studies (especially patch tests) been reported in the literature? Are these polishes or lacquers essentially or potentially harmful? Please cite references.

MEDICAL STUDENT, New York.

ANSWER.—From consideration of the list of ingredients which are present or likely to be present in various commercial nail lacquers and polishes, it is obvious that the studies of toxicology would be too numerous to mention in these columns. For example, the acetates—ethyl and butyl—are well known in industry for their toxic properties. It may also be pointed out that many of the agents used for the removal of lacquer are readily absorbed through the intact skin. Consideration of the toxicity or the possible toxicity of any of these ingredients in connection with its effect on a certain individual involves a question of the ingredients which are present in any one given product, as well as the possibility of the hypersensitivity of that individual to one of those ingredients.

Nail lacquers are solutions of nitrocellulose in various solvents, with the addition of certain aids to solution and plasticizers to make the film flexible: 1. True solvents: acetone, butyl acetate, amyl acetate, ethyl acetate, absolute denatured

alcohol, normal butyl alcohol or glycol ethers, as cellosolve, cellosolve acetate, butyl and methyl cellosolve. 2. Aids to solution: toluene, xylene, benzene, naphtha. 3. Nitrocellulose of various viscosities, drying in from one-half to forty seconds; pyroxylin. 4. Plasticizers: castor oil, tricresyl phosphate, dibutyl phthalate, butyl stearate, camphor, resin.

The irritating effect of nail lacquer is attributed by Gray to the formation of acetic acid in the solvent. In Prosser White's book on Occupational Dermatoses (London, ed. 4, H. K. Lewis & Co., 1934, p. 200) the following statement is found: "Women paint their nails with collodion, or celluloid dissolved in amyl acetate to give them a polished surface. If kept too long, the acetic acid is prone to be liberated and Gray has noted a distressing injury of the nails, from this acid."

These agents, like all the paraffin oils, produce a scurfy dermatitis, and Leitch says they bring about epilation."

Pardo Castello (Diseases of the Nails, Springfield, Ill., Charles C. Thomas, Publisher, 1936, p. 97) attributes the nail injury to the drying action of the solvents in nail lacquer. Writing of fragilitas unguium, he explains: "The cause of brittleness in these cases is excessive and too frequent manicuring. The constant use of colored enamels and of ethyl acetate or acetone to dissolve them produce the excessive dryness and consequently the nails lose their elasticity. Cuticle removers which consist of solutions of potassium hydrate are also contributing factors."

REPEATED ABORTIONS

To the Editor:—A woman, aged 34, married for twelve years, had a three months spontaneous abortion a year and a half after her marriage. Three years later she had a forceps delivery of a 10 pound (4.5 Kg.) boy, who is still alive and well. Three years ago she was again pregnant and, sixteen days before term, delivered a dead baby girl, weighing 7 pounds (3.2 Kg.). The attending physician reported that the fetus appeared to be normal. Two years ago she again had a three months spontaneous abortion. During May 1937, two weeks before term, she delivered a dead boy weighing 7 pounds (3.2 Kg.). During this last pregnancy she was under a physician's constant care. She was receiving injections (probably estrogen) up to the fifth month. At about the time of delivery, she states that she felt the baby turning in her abdomen and she was sure that something had happened. She went to a specialist, but the baby was already dead. To date she has been unable to receive a satisfactory explanation as to the cause of these stillbirths. She is 5 feet 6 inches (168 cm.) tall, weighs 130 pounds (59 Kg.) and has no subjective complaints. Her family history is negative. She had scarlet fever at 17 and a severe attack of poison ivy about ten years ago, followed by repeated mild attacks since then. She first menstruated at 15, is regular every four weeks, her periods lasting from eight to nine days, she has no pain, and the amount of bleeding is normal. The blood Wassermann reaction is negative, as is her husband's. The vagina is roomy, the perineum is fair, the cervix open for one finger, the uterus is anteverted and of normal size, and the adnexa are not palpable. Could you give me any information as to what could be the possible cause, as she is anxious to have another child but is afraid the same thing will happen again?

M.D., Pennsylvania.

ANSWER.—Whether the patient's abortions and stillbirths are accounted for by uterine pathologic conditions such as a subserous myoma, by "defective germ plasm" of the embryos, or by an endocrine imbalance cannot be determined from the data submitted. Trauma (such as coitus) might have been a factor in causing the abortions but would not have caused stillbirths. Possibly lotions containing lead were used for the treatment of poison ivy pruritus. Lead is recognized as an abortifacient if absorbed in sufficient quantity. Cases such as the one presented are sometimes never understood. More often, study reveals an abnormality which can be corrected with subsequent normal reproduction. Such a study would include: 1. Basal metabolic determinations on the patient before and during pregnancy. If low, the rate should be raised by thyroid administration, remembering that the "normal" basal metabolic rate during pregnancy may be as high as plus 25. Patients with deficient thyroid secretion are prone to miscarry. 2. A provocative Wassermann test, since syphilis is the chief cause of stillbirth. 3. Investigation of the diet, with particular respect to calcium and possibly vitamin E. Even if the diet appears adequate, it would be wise to prescribe additional calcium (as milk or dicalcium phosphate) and vitamin E (as wheat germ oil) during the next pregnancy. 4. Consideration of endocrine therapy. The substances required, and particularly the quantitative studies of the hormone content of the blood and urine which should precede such therapy, are expensive and for that reason may properly be deferred until other possible abnormalities have been investigated and dealt with. Kane (*Am. J. Obst. & Gynec.* 32:110 [July] 1935) reported successful treatment of thirty-six of forty patients with habitual abortion. He prescribed progesterone every other day for ten doses with intervals of three weeks between series of injections. The

endocrine therapy was supplemented by administration of thyroid substance and sodium iodide and was continued until the end of the fourth month. It is obvious that general systemic diseases such as nephritis and diabetes must be ruled out before any specific treatment is undertaken for the relative sterility.

HYPERHIDROSIS

To the Editor:—A man, aged 38, has been troubled for the past year with excessive sweating occurring at least once a day and only after masticating his food. His past history is essentially negative. The blood count, Wassermann reaction and basal metabolic rate are normal. Physical examination is negative. The man exhibits no nervous symptoms. He is anxious for cure, as his occupation is outdoor work and the necessity of leaving a restaurant bathed in sweat leaves him very uncomfortable.

M.D., Connecticut.

ANSWER.—Hyperhidrosis, local or generalized, brought on by eating, has been reported by a number of observers. The odor or taste of foodstuffs, in one case only acid foods (Hall, Robert: Transient Unilateral Hyperhidrosis Immediately Following Eating of Highly Acid Foodstuffs, *Irish J. M. Sc.*, October 1923, p. 291) were provocative. Answers to queries in *THE JOURNAL*, Jan. 11, 1936, page 148, and April 17, 1937, page 1360 and a criticism of the former Feb. 8, 1936, page 487, deal with the subject of hyperhidrosis. The writer of the criticism emphasizes the occurrence of sweating in connection with migraine rarely in the absence of acute symptoms.

J. K. Mayr, writing on the subject in the *Handbuch der Haut und Geschlechtskrankheiten*, Berlin, Julius Springer 13:4, 1932, makes the statement that points can be found at all levels in the central nervous system, from the cerebral cortex to the peripheral endings of the nerves, at which irritation may cause sweating. The sympathetic and parasympathetic systems also affect the sweat apparatus, pilocarpine, the stimulant of the parasympathetic, causing profuse sweating.

Neuroses of various sorts may cause excessive sweating and this in spite of an appearance of great nervous stability. This is the probable cause of the phenomenon in the case cited. A careful examination of the nervous system, including spinal fluid tests and scrutiny of the ocular fundus, is indicated. A psychiatric examination may be necessary. If these fail to show the cause of the trouble, an effort should be made to change the habits of the patient, lessening or abolishing the noonday meal, so that it will not be necessary for him to go outdoors immediately after eating.

NAPHTHALENE CATARACT

To the Editor:—A white man aged 30, a longshoreman, has a fully dilated, fixed, right pupil with rupture of the sphincter, tremulous iris, large gibbous separation of the retina superiorly and a homogeneous hazy vitreous through which the remainder of the fundus can be seen only as a deep red reflex. Vision was reduced to light projection. The left eye was similarly affected except that the pupil was normal and reacted to light. No separation of the retina could be seen, although within a few days a small separation appeared in the inferior temporal quadrant. Since then the vitreous opacities have cleared in both eyes, but the function of the retina has been so badly damaged that vision has been reduced to hand movements at a few feet. The man had been handling naphthalene and was addicted to alcohol. I am going to attempt some experimental work feeding laboratory animals alcohol and naphthalene in an effort to produce similar lesions and would therefore appreciate any information you may give as to the dosage and methods of administration used by previous investigators studying the effects of naphthalene on the eye.

M.D., Boston.

ANSWER.—The production of naphthalene cataract was first observed by Bouchard in 1886. The recent experimental work has been reviewed rather completely by D. R. Adams (*Brit. J. Ophthalm.* 14:49 [Feb.], 545 [Nov.] 1930). The pure crystalline naphthalene is dissolved in 15 cc. of warm liquid petrolatum and is fed to rabbits or white rats by means of an esophageal tube. The daily dose is from 2 to 3 Gm. This is continued until complete production of the opacified lens has been effected. Margherita C. Bourne (*Brit. J. Ophthalm.* 17:210 [April] 1933) has shown that the maintenance diet given to the animal with the naphthalene has a decided influence on the production of cataract. She found that if the diet consisted of oats and cabbage no lens changes occurred, although the vitreous and retina were greatly modified. If bran and carrots or oats were fed to the animal, complete cataracts were an early result. Biondo demonstrated that naphthalene vapors caused only a local and superficial reaction on the eyes and that this is temporary (*Am. J. Ophthalm.* 17:382 [April] 1934). Garcia Miranda felt that the retinal lesions were first noted in six hours. Changes occurred in the vitreous in from six to twelve days and in the lens much later. The cataract was felt to be secondary in nature (*Am. J. Ophthalm.* 17:571 [June] 1934).

AMEBIC DYSENTERY AND AMEBA CARRIERS

To the Editor:—Are the persons who had amebic dysentery in 1933 and 1934 and were apparently cured still proving to be a problem? Is there any available experience on that point? Presumably occasional stool examinations should be made in such cases. If amebas are found without symptoms, is the treatment of choice the same as if clinical symptoms appear?

WILLIAM S. CHASE, M.D., Akron, Ohio.

ANSWER.—Few of the persons who had amebic dysentery in 1933 and 1934 are still proving to be a problem. A few persons did present themselves for treatment during 1937 because of recurrence of their symptoms. These persons evidently were suffering from chronic amebic dysentery, which may follow a severe acute attack. In the chronic form there are recurrent attacks of dysentery with intervals in which there may be actual constipation. In these chronic cases the dysenteric attacks may recur for years.

It is advisable, therefore, that those who have had amebic dysentery should have occasional stool examinations, not only to detect recurrences but also to determine whether they are carriers.

The treatment of carriers is not the same as the treatment of those with clinical symptoms. According to Charles F. Craig (Amebiasis and Amebic Dysentery, Springfield, Ill., and Baltimore, Charles C. Thomas, 1934, p. 292) the most efficient and safest drug for the treatment of carriers is chiniofon. Emetin, bismuth compounds and the iodides as well as the arsenicals should not be used in the treatment of carriers unless other less toxic drugs have failed in eliminating the infection.

TREATMENT OF DOG BITE

To the Editor:—Feb. 1, 1938, a patient came to me with a lacerated wound on the left lower leg, caused by a dog bite. As far as I knew, the only thing to do was to cauterize the wound, which was one inch long and one-half inch deep, with fuming nitric acid, keeping the wound open and covering it with disinfectant dressings. The wound healed in about six weeks, leaving a deep scar. The patient tells me my treatment has been severely criticized by some other doctors, who claimed that I should have washed out the wound and stitched it. According to what I learned, washing a wound caused by a dog bite does not prevent rabies; besides, when a cauterization has been performed, it would be incorrect treatment to close up the wound with stitches. I think my procedure was right, and I should like to have your opinion as to its correctness. Since cauterization, especially in a large lacerated wound, always causes some sloughing and consequently scar tissue formation, it is simply a misfortune that the patient received a deep and long lacerated wound.

M.D., New York.

ANSWER.—The answer to this query depends entirely on the dog. If the dog escaped and was unknown, the treatment given was entirely correct, that is, to use "fuming" nitric acid and cover with a sterile dressing. Certainly when cauterization with nitric acid has been done the wound should not be closed but should be allowed to heal by granulation and scar formation.

If the dog was known, however, and could be impounded for observation against rabies, the situation would be different. If the dog was known to have rabies or strongly suspected of having rabies at the time of the accident, the treatment carried out was correct; but if the dog was not known to have rabies and could be impounded and watched, it would be better to cleanse the wound carefully with soap and water, irrigate abundantly with sterile water after debriding the edges, and close the wound with sutures. If after this procedure the impounded dog developed rabies, of course, the Pasteur treatment should be given.

References:

Rosenau, M. J.: *New England J. Med.* 198:787 (May 31) 1928.
Illinois Health Messenger 3:45 (June 15) 1931.

UREA AS DIURETIC

To the Editor:—The use of urea as a diuretic in the treatment of congestive cardiac failure has been known for a long time. I should like to know the mechanism of this action of urea and its role in normal renal physiology.

M.D., New York.

ANSWER.—The diuretic effect of urea depends on osmotic action in the lumen of the renal tubule. Because of its low molecular weight, urea exerts considerable osmotic pressure in solution, about one-half the pressure of an equimolecular solution of sodium chloride. The reabsorption of water from the glomerular filtrate by the tubular epithelium, chiefly in the loop of Henle and the distal convoluted tubule, results in a concentration of urea which in man may reach 4 or 5 per cent. If the blood urea is artificially elevated, an identical increase occurs in the urea concentration of the glomerular filtrate. Therefore, less water can be reabsorbed before the urea solution in the lumen of the tubule reaches a concentra-

tion capable of neutralizing, osmotically, the limited vital energy of the tubular epithelium. The water that fails of reabsorption increases the urinary output. Practically, the usefulness of urea as a diuretic is limited by several factors, such as the rapid diffusion of urea to nearly all body cells (thereby necessitating the administration of large amounts of urea), the back diffusion of urea from the lumen of the renal tubule into the epithelium (normally averaging 50 per cent of the urea in the glomerular filtrate), the dependence of diuresis on good renal function, and the nauseating effect of the drug on some patients.

VITAMIN C IN BLOOD DYSCRASIAS

To the Editor:—Can you give me information on the use of cevitic acid (ascorbic) acid in hemophilia, purpura and other blood dyscrasias?

ALBERT S. BORSKA, M.D., Altoona, Pa.

ANSWER.—In recent years many reports on the use of vitamin C (cevitamic acid) in hemorrhagic conditions have appeared in the literature and have been reviewed by I. S. Wright (*Am. J. M. Sc.* 192:719 [Nov.] 1936) and by Wilder and Wilbur (*Arch. Int. Med.* 59:512 [March] 1937). In view of the beneficial effect of cevitic acid therapy in the hemorrhagic diathesis of scurvy, this therapy has been tried in other hemorrhagic conditions such as thrombocytopenic purpura, Henoch-Schönlein's purpura and familial hemophilia, with apparently successful results reported by several European authors. Wright and Lilienfeld (*Arch. Int. Med.* 57:241 [Feb.] 1936), however, could not verify the view that cevitic acid, even in large doses administered intravenously, had any effect in these conditions and attributed the good results reported by others to natural remissions which occur in these diseases. Furthermore, scurvy may simulate thrombocytopenic purpura or hemophilia, for occasionally there may be present a low platelet count which responds to vitamin C therapy.

Wilder and Wilbur also concluded that vitamin C therapy in hemorrhagic conditions other than scurvy usually yielded disappointing results. However, in all such conditions if the capillary resistance test shows increased capillary fragility this would lead to the suspicion of vitamin C deficiency and a therapeutic test should be carried out.

DRAINAGE AFTER CHOLEDOCHOTOMY

To the Editor:—Following choledochotomy is the T drain the most satisfactory or are there some who believe that a part of a catheter placed within the lumen is better? In the latter instance it would seem that in order to avoid leakage the tip would have to extend beyond the sphincter of Oddi and a duodenal tube kept in until after the common duct catheter had passed. Would this endanger the pancreas?

HAROLD E. MARKS, M.D., Somerville, Mass.

ANSWER.—A rubber catheter or a T or an L shaped rubber tube may be used satisfactorily as a common duct drain. If the duct opening is well sutured about the drain there should be no leakage.

Ordinarily it is not desirable for the tube to extend through the sphincter of Oddi into the duodenum.

To permit better drainage and to avoid possible blockage of the end of the tube, several openings may be cut at the sides.

The patency of the outlet of the common duct may be tested at operation by the injection of water or by the passage of a small catheter or suitable instrument. Caution should be taken in any dilation of it, as rupture of the duct wall may lead to peritonitis or postoperative swelling and obstruction of the lumen. This may also involve the pancreatic duct, and when it joins the common duct outside the duodenal wall obstruction of the common lumen of the outlet even by a spasm might favor a reflux to the other ducts of either bile or pancreatic juice, depending on the pressure.

Acute pancreatitis has followed cholecystectomy without drainage of the common duct, probably because of a reflux of bile. Acute cholecystitis has followed a reflux of pancreatic juice into the gallbladder.

While it is probable that a tube passed through the sphincter into the duodenum may produce some temporary obstruction of the lumen of one or both ducts, it is not likely that any reflux will develop with external bile drainage and little pancreatic secretion.

Drainage of the common duct should be done when there is any possibility of obstruction, since occasionally instillation of iodized oil into the common duct drain has been shown to extend into the pancreatic ducts.

One may use occasionally two rubber tubes in the common duct, one to drain the bile externally while the other may be

passed through the sphincter for the introduction of fluids or for its effect in dilating the sphincter. Parenteral injection of fluids is now usually preferred.

A rubber tube may be buried in the common duct with one end extending into the duodenum for internal biliary drainage with primary closure of the common duct, especially after end to end suture. The duodenal end should be left long so that peristalsis will carry the tube away as soon as fixation sutures of catgut are absorbed. This procedure should not endanger the pancreas.

INTRAVENOUS OR SUBCUTANEOUS INJECTION IN PREGNANCY TEST

To the Editor:—In the rabbit pregnancy test must the urine be injected intravenously? If it can be injected subcutaneously, what is the dosage of the urine and how long after the administration of the urine are the ovaries examined? Is the test as reliable when the urine is administered (in larger doses) subcutaneously as when the urine is injected intravenously?

M.D., Pennsylvania.

ANSWER.—The Friedman test for pregnancy, with virgin female rabbits, or the Schneider-Priest modification, has for the basis of its technic the intravenous injection of the first morning voided specimen. The ear vein of the rabbit is so easily accessible under most circumstances that the use of other modes of administering urine is not necessary. It is possible to obtain a test by the use of subcutaneous injection of urine but there are so many disadvantages as compared with the intravenous route that the slight extra effort is worth while.

The subcutaneous test requires more time (seventy-two rather than forty-eight hours), more urine (15 cc. daily for two days instead of 10 cc.), and the results are not as reliable as with the intravenous route because of the slower absorption of urine and because of the possibility of producing an inflammatory reaction in the tissues, which might hinder or stop absorption.

The intraperitoneal injection is superior to the subcutaneous because the urine is absorbed much more rapidly through the peritoneum than from the subcutaneous tissues, the absorption is more complete and there is less chance of producing inflammatory reaction or gangrenous sloughing of the tissues. The subcutaneous and intraperitoneal modes of administering urine result in a greater number of false negative results.

BEE VENOM FOR RHEUMATISM

To the Editor:—Is there any medical authority for the use of bee venom in the treatment of rheumatic infections?

EUGENE C. LOWE, M.D., Miami, Fla.

ANSWER.—For generations it has been widely believed that the sting of bees is a cure for rheumatism. The first reference in the literature concerning its use in the treatment of rheumatoid arthritis was published in 1859 by Demartis. Terc wrote at some length concerning its use in this connection in 1880. More recently several bee venom preparations have been placed on the market. They are supposed to contain the natural secretion of the honey bee in physiologic solution of sodium chloride. To date, no one has proved that bee venom is a specific form of therapy in rheumatoid arthritis. Because it is a good counter-irritant, some relief may be obtained following its use. A more enthusiastic report concerning bee venom therapy appears in Beck's book "Bee Venom Therapy," 1935, Appleton-Century Company, New York.

IRON IN CITY WATER SUPPLY

To the Editor:—In what ways would a water supply containing 0.9 part per million of iron be objectionable? Do you consider iron removal necessary if this water is to be used for a city water system? If so, what would be the cheapest method of removal that would be effective?

E. J. SCHWINGHAMER, M.D., Grenora, N. D.

ANSWER.—The United States Treasury Department standard for iron content in water used on interstate carriers suggests a limit of 0.3 part per million. As a rule consumers will object to iron in a public water supply in excess of 0.5 part per million because of the staining of linens, utensils and plumbing fixtures. For these reasons it would be desirable to install an iron removal plant for a city water system having 0.9 part per million of iron in its water supply.

The cheapest and most effective process to use for the removal of iron could be determined only after a complete chemical analysis of the water. It would be prudent for a city contemplating removal of iron from its water supply to employ a competent water chemist and an experienced water-works engineer to advise on the treatment process and the design of the iron removal plant. Processes of iron removal used in water works practice include aeration, sedimentation, coarse contact beds, sand filters and chemical treatment.

HAZARDS OF TANNING

To the Editor:—Please outline the industrial diseases that might be associated with the tanning of leather.

M.D., Pennsylvania.

ANSWER.—The industrial diseases potentially associated with the tanning industry in some measure depend on the type of tanning operation, such as chrome tanning or tannic acid tanning. D. K. Minster (*J. Indust. Hyg.* 7:299 [July] 1925) lists forty-two possible occupational disease exposures in the tanning industry. The agents listed by this investigator as potential sources of occupational diseases are anthrax, sulfureted hydrogen, cyanides, arsenic, mercury bichloride, salt, caustic soda, sulfuric acid, lime, sodium sulfide, arsenic sulfide, bacterial action, parasitic fungi, ammonium sulfide, lactic acid, methan, carbon dioxide, myrobalan, sumac, quebracho, sulfites, sulfuric acid, chrome, hydrochloric acid, formaldehyde, lead, fish, mineral oils, leather dusts, hair, tanbark, aniline, mercury, ammonium acetate, butyl acetate, benzene, naphtha, turpentine, butyl alcohol, methyl alcohol, potassium ferrocyanide, carbon monoxide and metal fumes. In 1931 the Retail Credit Company, an insurance investigating organization, published an extensive report on the hazards connected with tanning. This report furnishes extensive listing of the exposures connected with every common operation in the tanning industry. From a list of some seventy-five individual tannery occupations described in this report and associated with possible exposures, one single item is shown as an example.

Unloader (Hide House): Unloads bundles of hides from box cars standing at the unloading platform. Uses hand trucks; weighs hides and stores them. Chief Hazards: Dampness; rancid odor, due to hides' being salted and in a state of putrefaction; dermatitis; hydrogen-sulfide; arsenic; mercury (rare); salt; anthrax.

ROENTGEN THERAPY IN BRONCHIECTASIS

To the Editor:—What is the present status of high voltage roentgen treatment for bronchiectasis?

M.D., Kansas.

ANSWER.—The use of high voltage roentgen therapy for bronchiectasis has been described by Maurice Berck and William Harris (*THE JOURNAL*, Feb. 13, 1937, p. 517). Berck has previously mentioned the treatment of a single case of bronchiectasis (*J. Mount Sinai-Hosp.* 1:98 [July-Aug.] 1934).

Apparently there are no corroborative reports as yet in the literature. The report analyzes the data from thirty patients with bronchiectasis who were treated and observed over periods of from a few months to two or three years. More than half of this number were benefited by high voltage roentgen therapy with the technic outlined.

The best results apparently were obtained in the group with foul, profuse expectoration. They described aggravations of the symptoms during the first part of the treatment. The inference from the article are that the poorest results are to be expected in the dry types of bronchiectasis. While there is some risk of temporary aggravation of symptoms and other manifestations of roentgen sickness, such risk should not prevent its trial in view of the evident benefits that may be expected.

TWENTY-ONE DOSE RABIES VACCINE— "FUMING" NITRIC ACID

To the Editor:—A child aged 2½ is receiving rabies vaccine, Gilliland I am using the fourteen dose Semple method of treatment. A twenty one dose treatment is recommended by the Gilliland company for leprosy about the face, as my patient has. Are the twenty-one doses better than the fourteen? Is fuming nitric acid to be used as a local cautery? Is there anything else to be done for the prevention of rabies?

J. B. SPRINKS, M.D., Wenaco, W. Va.

ANSWER.—Antirabies vaccine is the only specific preventive available. Presumably the "twenty-one dose treatment" would produce greater immunizing effect. Fuming nitric acid is regarded as the most effective agent for local cauterization of suspected wounds.

VALUE OF TYPHOID VACCINE

To the Editor:—To settle a dispute on the value of typhoid vaccine please give me the consensus of immunologists as to the manner of its action. Do the armies of the world all use typhoid vaccine today? What are the arguments pro and con on this subject? Will you answer specifically the question "Is typhoid vaccine of any value?"

M.D., New York.

ANSWER.—Typhoid vaccination is a good and reliable method of prevention. Antityphoid vaccination is practiced in armies and navies the world over. There are no valid arguments against the proper use of potent typhoid vaccine for preventive purposes.

Medical Examinations and Licensure

COMING EXAMINATIONS STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, May 28, page 1859.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* Examinations will be held in all centers where there is a Class A medical school and five or more candidates who wish to write the examination, June 20-22 and Sept. 12-14. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Oral examinations for Group A and B applicants* will be held at San Francisco, June 13-14. Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written examination* will be held at various centers of the United States and Canada, Oct. 17. *Final date for filing applications is Sept. 1.* Chairman, Dr. Walter L. Bierring, 406 Sixth Ave., Suite 1210, Des Moines, Iowa.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *General oral, clinical and pathological examinations for all candidates (Groups A and B)* will be conducted in San Francisco, June 13-14. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: San Francisco, June 13; Washington, D. C., Oct. 8; Oklahoma City, Nov. 15. *All applications should be filed immediately and case reports, in duplicate, must be filed not later than sixty days before the date of examination.* Sec., Dr. John Green, 3720 Washington Blvd., St. Louis, Mo.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: Chicago, June 10-11. Sec., Dr. Fremont A. Chandler, 6 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: San Francisco, June 10-11. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PATHOLOGY: San Francisco, June 13-14. Sec., Dr. F. W. Hartman, Henry Ford Hospital, Detroit.

AMERICAN BOARD OF PEDIATRICS: Detroit, October 26; Rochester, N. Y., November 13; and Oklahoma City, November 15. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: San Francisco, June 11. Sec., Dr. Walter Freeman, 1028 Connecticut Ave., N. W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: San Francisco, June 10-12. Sec., Dr. Byrl R. Kirklín, 102-110 Second Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF UROLOGY: San Francisco, June 11-13. Sec., Dr. Gilbert J. Thomas, 1009 Nicolet Ave., Minneapolis.

Illinois January Examinations

Mr. Homer J. Byrd, superintendent of registration, Illinois Department of Registration and Education, reports the written examination (graduates of foreign schools given also a practical test) held at Chicago, Jan. 25-27, 1938. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Fifty-four candidates were examined, 50 of whom passed and four failed. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Colorado School of Medicine.....	(1936)	82	
Yale University School of Medicine.....		82*	
Chicago Medical School.....		83, 83	
Northwestern University.....		83,	
(1936) 81,* (1937) 80,* 83,* 84, 85, 85, 86, 86, 86			
Rush Medical College.....	(1936) 84, (1937) 84, 84,*	86*	
School of Med. of the Division of Biological Sciences (1936)		84,	
- 85, 86,* 87*			
University of Illinois College of Medicine.....	(1936)	83,	
(1937) 77, 80, 82,* 83, 83,* 84, 84, 84, 84,* 84,*			
84,* 85, 86, 87, 88, 90, +			
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin.....	(1936)	75	
Julius-Maximilians-Universität Medizinische Fakultät, Würzburg.....		75	
Universität.....		78	
Universität.....		80	

School	FAILED	Year Grad.
Chicago Medical School.....	(1937, 2)	
Ludwig-Maximilians-Universität Medizinische Fakultät, München.....	(1912)	
Regia Università degli Studi di Palermo. Facoltà di Medicina e Chirurgia.....	(1929)	

Twenty-three physicians were successful in the practical examination given for reciprocity and endorsement applicants in Chicago on January 27. The following schools were represented:

School	PASSED	Year Grad.	Reciprocity with
University of California Medical School.....	(1933)*	California	
University of Colorado School of Medicine.....	(1934)*	Colorado	
Howard University College of Medicine.....	(1928)*	New Jersey	
Rush Medical College.....	(1929)	Ohio	
University of Illinois College of Medicine.....	(1936)*	Maryland	
State University of Iowa College of Medicine.....	(1933)	Iowa	
Tulane University of Louisiana School of Medicine.....	(1931)	Alabama	
University of Minnesota Medical School.....	(1928)	Minnesota	

St. Louis University School of Medicine.....	(1926)*	Missouri	
Washington University School of Medicine.....	(1927), (1936)	Missouri	
Creighton University School of Medicine.....	(1932)	Kansas	
University of Cincinnati College of Medicine.....	(1935)* (1937)*	Ohio	
Western Reserve University School of Medicine.....	(1931)	Ohio	
University of Tennessee College of Medicine.....	(1936)	Arkansas,	
Tennessee			
University of Virginia Department of Medicine.....	(1930)	Minnesota	
Universitatea Regele Ferdinand I-ii din Cluj Facul-tatea de Medicină și Farmacie.....	(1920)	Penna.	

School	PASSED	Year Endorsement Grad. of
Loyola University School of Medicine.....	(1937)*	N.B.M.E.x.
Northwestern University Medical School.....	(1937)	N.B.M.E.x.
Harvard University Medical School.....	(1932), (1933)*	N.B.M.E.x.

* License has not been issued.
† Average grade not reported.

Minnesota January Report

Dr. Julian F. Du Bois, secretary, Minnesota State Board of Medical Examiners, reports the oral, written and practical examination held at Minneapolis, Jan. 18-20, 1938. The examination covered 12 subjects and included 60 written questions. An average of 75 per cent was required to pass. Fifty-four candidates were examined, all of whom passed. Three physicians were licensed by reciprocity and five physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Stanford Univ. School of Medicine.....	(1936) 83.4, 86.6, (1937)		86.6
Georgetown University School of Medicine.....	(1933)		84
Northwestern University Medical School.....	(1937)		87.6
Rush Medical College.....	(1937)		84.4
School of Med. of the Division of Biological Sciences (1937)			86.5
University of Louisville School of Medicine.....	(1933)		89.3
Tulane University of Louisiana School of Medicine.....	(1934)		85.3,
90, (1936) 87.6			
Johns Hopkins University School of Medicine....	(1935) 88.6, 89.4,	91.4	
Harvard University Medical School.....	(1935) 86.5, 94		
University of Minnesota Medical School.....	(1935)		89,
(1936) 86.4,* 90, (1937) 84,* 84.1,* 84.6,* 85.3,*			
85.4,* 86.2,* 86.2,* 86.3,* 87.2,* 87.3, 88.1,* 88.1,*			
88.3,* 88.4,* 88.6,* 89.6,* 90.4,* 92.2			
St. Louis University School of Medicine.....	(1937)		87.2
Cornell University Medical College.....	(1935)		84.3
University of Oregon Medical School.....	(1935)		88.1
University of Pennsylvania School of Medicine.....	(1930)		88.5,
(1934) 90.4, (1935) 84, 85.6			
University of Pittsburgh School of Medicine.....	(1935)	84, 86.6	
Baylor University College of Medicine.....	(1936)		91.4
University of Texas School of Medicine.....	(1936)		89
University of Alberta Faculty of Medicine.....	(1932)		82
Univ. of Manitoba Faculty of Medicine.....	(1934) 87.1, (1937)		88.2
Queen's University Faculty of Medicine.....	(1931)		87.1
University of Toronto Faculty of Medicine.....	(1935) 87.3, 88.6		

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Illinois College of Medicine....	(1932), (1935)		Illinois
University of Nebraska College of Medicine.....	(1932)		Nebraska

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad. of
Johns Hopkins University School of Medicine.....	(1936) N. B. M. Ex.	
Harvard University Medical School.....	(1935) N. B. M. Ex.	
Washington University School of Medicine.....	(1929) N. B. M. Ex.	
Duke University School of Medicine.....	(1934) N. B. M. Ex.	
University of Toronto Faculty of Medicine.....	(1934) N. B. M. Ex.	

* This applicant has received the M.B. degree and will receive the M.D. degree on completion of internship.

Ohio Reciprocity and Endorsement Report

Dr. H. M. Platter, secretary, Ohio State Medical Board, reports 15 physicians licensed by reciprocity and 3 physicians licensed by endorsement on April 5, 1938. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Colorado School of Medicine.....	(1934)		Colorado
Rush Medical College.....	(1930)		California
School of Med. of the Division of Biological Sciences.....	(1937)		Virginia
University of Kansas School of Medicine.....	(1934)		Kansas
University of Louisville Medical School.....	(1934)		Kentucky
University of Michigan Medical School.....	(1934)		Michigan
St. Louis University School of Medicine.....	(1936), (1937)		Missouri
Washington University School of Medicine.....	(1936)		Missouri
Creighton University School of Medicine.....	(1936)		Iowa
Long Island College of Medicine.....	(1936)		New York
Medical College of the State of South Carolina.....	(1937)		S. Carolina
Meharry Medical College.....	(1918)		Tennessee
University of Wisconsin Medical School.....	(1936)		Wisconsin

School	LICENSED BY ENDORSEMENT	Year Endorsement Grad. of
Yale University School of Medicine.....	(1933), (1936) N. B. M. Ex.	
Western Reserve University School of Medicine.....	(1935) N. B. M. Ex.	

Book Notices

Cutaneous Cancer and Precancer: A Practical Monograph. By George M. MacKee, M.D., Professor of Clinical Dermatology and Syphilology, New York Post-Graduate Medical School and Hospital, Columbia University, and Anthony C. Cipollaro, M.D., Associate in Dermatology, Skin and Cancer Unit, New York Post-Graduate Medical School and Hospital, Columbia University. With a foreword by Francis Carter Wood, M.D. Cloth. Price, \$3.75. Pp. 222, with 245 illustrations. New York: American Journal of Cancer, 1937.

As indicated in the preface, the monograph was prepared for the purpose of aiding in the reduction of the mortality from accessible cancer. Every variety of cancerous and precancerous lesion encountered on the skin and its neighboring mucous membranes is presented concisely and clearly from the standpoint of symptomatology, diagnosis, etiology, pathology and treatment and, best of all, is beautifully illustrated with excellent reproductions of photographs and photomicrographs. A good grade of paper has been used and of course is one factor responsible for the excellent reproductions. The four chapters are on the morbidity and mortality of cutaneous cancer, the precancerous dermatoses, carcinoma and sarcoma, and established therapeutic methods. Extremely precise presentation of the subject matter has made it possible to incorporate almost everything known about this subject, together with the illustrations, in this compact and relatively small volume. For the investigative student a carefully selected bibliography, which incorporates most of the pertinent literature, has been given.

Like syphilis, cutaneous cancer and precancer are commonly treated by physicians in all branches of medicine. For that reason this authoritative volume should be in the hands of every one, general practitioner, dermatologist and physician in other branches of medicine alike, who attempts the treatment of cutaneous cancer or precancer in any of the numerous manifestations. The importance of this statement is evident from recent tabulations, which indicate that about 7 per cent of all deaths from cancer are due to cancer of the accessible parts. There is no question about the fact that early proper diagnosis and treatment by those who attempt the management of such lesions will substantially decrease this high mortality.

Many will not agree with the use of the term precancerous dermatoses to cover many relatively benign conditions, but the authors have considered this fact. Tables such as the ones on pages 145 and 146, indicating the results of different methods of treatment by different physicians, are of little or no prognostic significance, in that they contain no statement with regard to the microscopic grading of the epitheliomas studied and treated. Unfortunately, throughout the book no attention has been given to grading of the squamous cell tumors. It is not sufficient to say that a given lesion is a squamous cell epithelioma. Broders has carefully classified these tumors according to the degree of malignancy into grades 1, 2, 3 and 4, a practical classification which probably should be adopted by every one and which many have already adopted. If one finds histologically that one is dealing with a grade 1 lesion there is relatively little cause for concern compared to the respect one must have for a grade 4 or even a grade 3 specimen. Perpetuation of error is evident in the text on page 32 under *seborrhoeic keratosis*, where that disorder has been confused with senile keratosis, as it was previously confused by Gans and later by McCarthy. Hamilton Montgomery and others have shown that bowenoid changes do not occur in *seborrhoeic keratosis*. Although the authors speak of the possibility of epithelioma developing from sebaceous adenomas and other sebaceous lesions, no mention was noted of true sebaceous cell carcinoma. The reviewer probably noted the omission of this rare condition because he recently saw a sebaceous cell carcinoma of the pubic region in a woman aged 50, the lesion having been first noticed three years ago but having been rapidly enlarging in the past few months. The legends of a number of the photomicrographs constitute the weakest part of the book, and really the only weak part. Some legends are incorrect and others are questionable. As examples, figure 28, labeled *senile keratosis*, is already a grade 2 or grade 3 squamous cell epithelioma. Figure 36, labeled *seborrhoeic keratosis* and early basal cell epithelioma, is a senile keratosis with liquefaction necrosis of the basal cell layer. Figure 41, labeled *carcinoma in kraurosis vulvae*, might better be labeled

grade 4 squamous cell epithelioma. Figure 49, labeled highly malignant epithelioma developing in *leukoplakia*, appears at most to be a grade 1 squamous cell epithelioma if not merely a pseudo-epitheliomatous hyperplasia. Figure 66, labeled *verrucous nevus*, appears to be a typical *verruca senilis* (*seborrhoeic keratosis*). Figures 137 and 139, labeled basal cell epitheliomas, appear to be examples of basosquamous cell epitheliomas, some of the tumor cells being pale staining, an error once made in a publication by the reviewer. Figures 144 and 145, labeled intra-epidermic basal cell epithelioma, are squamous cell epitheliomas in situ presenting features of Bowen's disease. Figure 147, labeled basal cell epithelioma in deep cutis apparently coming from an overlying prickle cell epithelioma, is a classic grade 4 squamous cell epithelioma in the deep cutis imitating a basal cell epithelioma. Figure 153, labeled intradermic mixed cell epithelioma, is a squamous cell epithelioma in situ with individual cell keratinization, a common picture in true precancerous dermatoses. In figure 200, Bowen's precancerous dermatosis, most of the component cells are prickle cells rather than basal cells.

Because of its excellence, and the fact that it is the only complete book on the subject in the English language, as stated, this volume should be in the hands of all students and practitioners interested in the subject, and it is most highly recommended.

Story of a Great Hospital: The Royal Infirmary of Edinburgh 1729-1929. By A. Logan Turner, M.D., LL.D., Hon. F.R.C.P., Consulting Surgeon, Ear, Nose and Throat Department, The Royal Infirmary. Cloth. Price, 10s. Pp. 406, with 38 illustrations. Edinburgh: Oliver and Boyd, 1937.

The Royal Infirmary of Edinburgh, the first of the large voluntary hospitals of Scotland, was founded in 1729. Turner has lovingly depicted the progressive changes which have occurred in this venerable institution, jointly devoted to the alleviation of human suffering and the training of succeeding generations of medical men and women. In his comprehensive story Turner has wisely omitted the years 1929-1937 because, as he justly remarks, many of the present day problems affecting the policy of the institution remain unsolved. From its inception the Royal Infirmary has been a teaching hospital, an essential part of the Edinburgh School of Medicine.

The influence exerted on the founders of the Royal Infirmary by the University of Leiden, the imprint of Herman Boerhaave, who dominated European medicine in the early part of the eighteenth century, are delightfully recounted in chapter III. The teaching of Hippocrates—the return to the study of nature—the belief that accurate observation and experience at the bedside were the basic principles of all medical practice, so inspiringly taught by Boerhaave, were carried back to Edinburgh by such men as John Monro primus, Archibald Pitcairne, Alexander Monro primus, son of John, John Rutherford, Andrew St. Clair, Andrew Plummer and John Innes.

Chapter V succinctly describes the many early unsuccessful and finally successful attempts to awaken public interest in the proposed infirmary. John Monro was the leading spirit in this enterprise. Aug. 6, 1729, the infirmary opened its doors. It boasted of but six beds but was destined to become the largest voluntary hospital in the United Kingdom. Turner pathetically recounts the first inventory taken, when, in addition to the furniture, the commissary possessed "4½ lb. of small candles, 1 lb. of great candles, containing seven, about two carts of coal, 6 pecks of meal and two pecks in bread, 4½ of groats, a peck and a half of sowing seeds and 24 chappin bottles of ale (a chappin is approximately one quart)." The three Alexander Monros, primus, secundus and tertius, were repeatedly ordinary managers and actively engaged in the business of the infirmary board. Chapter VI contains the story of the construction of the Royal Infirmary on land formerly the property of the Dominican Order of Black Friars. It is of academic interest only. Succeeding chapters deal with the system of admission of patients, changes in executive methods and the fierce controversy which ended with the abolishment of the system of attendance by rotation. This decision caused several of the leading surgeons and practitioners to resign and accept chairs elsewhere. A prerequisite to appointment on the attending staff of the Royal Infirmary might well be copied by some of our own hospital.

in the United States. Feb. 3, 1794, the board voted that "no future member of the College of Surgeons shall be admitted to practice as an Attendant Surgeon in the Infirmary till after the lapse of five years from the time of his being admitted a member of the Incorporation of Surgeons."

As early as 1749, John Moultrie of Charleston, S. C., graduated in Edinburgh, to be followed by Benjamin Rush and Adam Kuhn, Casper Wister, Philip Syng Physic, Samuel Bard and others of lesser fame. In the eighteenth century Edinburgh had supplanted Leiden as the medical Mecca. Students came from every country in Europe as well as from both the Americas. In 1847 James Young Simpson experimented on himself with the vapor of chloroform and, satisfied with its possibilities, administered the first chloroform anesthesia in the Royal Infirmary. The patient awoke "with a clear merry eye and placid expression of countenance, wholly unlike what is found to obtain after ordinary etherization!" Typical of the research work which Turner undertook while writing his history is reference to nurse Janet Porter, who served the Royal Infirmary for forty-seven years during which time she was staff nurse to both Syme and Lister.

Much is she worth, and even more is made of her;
Patients and students hold her very dear,
The doctors love her, tease her, use her skill;
They say "The Chief" himself is half afraid of her.

So wrote a patient of Lister's while in the infirmary.

The last decade in the old Royal Infirmary, 1870-1879, marked the election of Lister to the chair of clinical surgery, a position which he held until 1877, when he became clinical professor of surgery at King's College, London. Women medical students were admitted in 1886 but instructed in a separate School of Medicine for Women. Chapters xv to xvii deal with the expansion of the infirmary and progress in teaching methods. Soon after the outbreak of the World War the medical and surgical staffs became sorely depleted, those holding commissions in the naval reserve and territorial army leaving for national service elsewhere, while a large number holding commissions in the Royal Army Medical Corps formed the staff of the Second Scottish General Hospital. The duties of interns were undertaken by senior medical students. The final chapters deal with the remarkable postwar expansion of the infirmary and medical school. The visit of King George and Queen Mary in the summer of 1920 and the writing of their names in the center of the dining room table in the residency—already filled with the names of past and present house physicians and surgeons—was, quite naturally, a banner day for Edinburgh.

With pardonable Scottish pride Turner reminds us that "in the founding of University College, the germ of the University of London, the strongest, single intellectual influence was that of Edinburgh, and, from the example of the Scottish universities, London drew many of its most distinctive features." As medical men we must venerate an institution which gave to the world such figures as the four Monros, James Syme, John Rutherford, William Cullen, John Bell, James Y. Simpson and Lister.

The story of the Royal Infirmary of Edinburgh is charmingly and entertainingly spun by Turner, and he deserves the congratulations of his colleagues for the successful labor of love which he has completed. The volume can be heartily recommended to any student of medical history.

Las miocarditis. Por el Doctor Gregorio N. Martinez, professor titular de la Facultad de medicina de Córdoba. En colaboración con los doctores S. González Astudillo y D. Deza Cenget. Paper. Pp. 191, with 69 illustrations. Buenos Aires. El Ateneo, Librería científica y literaria, 1937.

In discussing myocarditis, Martinez follows the traditional lines of etiology, pathology, symptomatology, diagnosis, prognosis and treatment. There is a helpful introduction describing the author's conception of myocarditis and also a useful classification with groupings made from clinical and anatomic points of view as well as from the standpoint of etiology or of localization; i. e., focal or diffuse types. While clinicians and pathologists may not always be able to fit cases closely into these categories, some such plan is of advantage for purposes of description and easy understanding of the subject. While there

is much condensation there is little slighting of important facts. There are good photomicrographs and electrocardiograms. The clinical features of myocarditis seen in the infections are, as they should be, well stressed and described with considerable detail. The style is clear. One can agree with Professor Castex, who writes a preface, that this book, the result of twenty-five years of observation and study, dealing with an important phase of medicine, is one that can be read with profit by practitioners and undergraduates.

Manual of Clinical and Laboratory Technic. By Hiram B. Weiss, A.B., M.D., F.A.C.P., Associate Professor of Medicine, College of Medicine, University of Cincinnati, Cincinnati, Ohio, and Raphael Isaacs, A.M., M.D., F.A.C.P., Associate Professor of Medicine, Assistant Director of the Thomas Henry Simpson Memorial Institute for Medical Research, University of Michigan, Ann Arbor. Fifth edition. Cloth. Price, \$1.50. Pp. 141. Philadelphia & London: W. B. Saunders Company, 1937.

Many useful laboratory procedures have been developed and standardized since the preceding edition of this useful epitome on clinical and laboratory technic was published. A good portion is included in the present edition. Under the discussion of vitamin C content of the urine it would have been desirable to include the normal values for the urinary excretion of cevitamic acid. The vitamin C saturation test also is not mentioned. The present edition includes additional tests for albumin in the urine, tests for Bence Jones protein, technic of the Addis count, newer hematologic methods (including Isaacs' technic of bone marrow biopsy), Neufeld's reaction, liver function tests, the Takata-Ara reaction, new renal function tests and diagnostic agglutination reactions. These additions have materially increased the value of the manual. Interns and physicians will find this manual useful as a ready reference on gross details of the commonly employed laboratory tests. It is not intended and will not serve as a substitute for a standard textbook on laboratory procedures.

Medical Magic. By David Dietz. Cloth. Price, \$3.50. Pp. 380, with 45 illustrations. New York: Dodd, Mead & Company, 1938.

Among the interpreters of medical science for the public, David Dietz is widely known. His column appears in most of the Scripps-Howard newspapers. He has for some fifteen years attended most of the important American medical meetings and he has visited important medical institutions both in the United States and abroad. He has thus been able to find the drama in medical science without having to create it out of his imagination. He tells his story in a straightforward manner and he has been able by his training in journalism to lend movement and action to objective descriptions. The book is abreast of the times, with excellent sections dealing with the glands, with the newer investigations in neurology, and with work on heart disease and on contagion. The book is furthermore supplemented with a chapter of anticipation as to what the future may bring and with a competent bibliography. The volume may be especially recommended to the youngster in high school who contemplates medicine as a career and who needs the inspiration that a book like this can bring.

Il cancro della mammella: Studio anatomo-patologico e clinico. Dal Dott. Giampaolo Coggi. Clinica chirurgica generale e terapia chirurgica della R. Università di Milano. Diretta da M. Donati. Paper. Price, 35 lire. Pp. 192, with 42 illustrations. Bologna: L. Cappelli, 1937.

This small volume covers with considerable completeness the pathogenesis of cancer of the breast, discusses precancerous lesions, has an excellent chapter on the pathologic anatomy with clear photomicrographic illustrations, and surveys classification, bilateral carcinoma, carcinoma of the male mamma, symptomatology and treatment. An extensive bibliography not at all limited to Italian writers is appended. The recent experimental work on the effects of the administration of endocrine substances in the causation of tumors in animals is surveyed. Attention is called to the fact that it was Wintz in 1920 who introduced the idea of roentgen sterilization as a part of the radiologic and surgical treatment of cancer of the breast, and the proposal of Steel that such sterilization be undertaken to prevent the possibility of pregnancy is commended. There are good chapters on grouping, cell secretion and the morphology and extent of the tumor in connection with prognosis. The proper technic for mastectomy, which follows the classic lines,

is excellently illustrated. Finally, preoperative and postoperative radiotherapy are considered. The author is conservative in his attitude on this subject. Altogether the monograph is an excellent one.

Die Geschlechtskrankheiten und ihre Gefahren für das Volk. Von Dr. med. Johannes Breger, Oberregierungsrat i. R. Second edition. Paper. Pp. 150, with 108 illustrations. Berlin: R. v. Decker's Verlag, G. Schenck, 1937.

This book reviews the history of the venereal diseases and their relationship to prostitution. The dangers of the disease to youth and to the whole population are vividly portrayed, but the curability of syphilis and the importance of its adequate treatment are emphasized. The possible late results of gonorrhea, including the large percentage of sterility caused by it, are discussed and attention called to the necessity of tracing sources of infection in venereal disease control. The enormous economic loss caused by these diseases is shown. Statistics are presented from various countries showing that the incidence of these diseases is apparently being decreased by the fight which has been waged in recent years against them. The monograph is profusely illustrated by cuts from both German and foreign sources, including a number from English and American periodicals. It is an interesting and informative popular review of the subject.

The Human Mind. By Karl A. Menninger. Second edition. Cloth. Price, \$5. Pp. 504, with 16 illustrations. New York: Alfred A. Knopf, 1937.

Since its first edition in 1930, more than 160,000 copies of this book have been sold in the United States. It is now revised completely and printed in a handsome new edition, corrected, enlarged and rewritten. Particularly has the section on psychoanalysis been rewritten, because in the interval Dr. Menninger has gone a considerable distance in his relationship to that branch of psychiatry. He considers psychoanalysis the only real mental hygiene of which he has knowledge. There will be many differences of opinion as to whether or not the new book is as safe for the average reader as was the first edition. Of this book certainly it may be said that it is easily readable and that the numerous case reports have been selected in a manner to hold the reader's interest—almost like fiction. The new emphasis on the psychoanalytic point of view has certainly not diminished its interest. The book is supplemented by a selected bibliography and by an adequate index.

Handbook on Nasal Accessory Sinuses. By Frank L. Alloway, B.Sc., M.D., Otolaryngologist at Holston Valley Com. Hospital, Kingsport, Tennessee. Cloth. Price, \$2. Pp. 121, with illustrations. Kingsport: The Author, 1937.

Alloway's booklet is too sketchy for the laryngologist but may be of some use to the general practitioner who has forgotten what he learned about sinuses in medical school. By reason of its brevity and elimination of all but the most salient essentials, it may have a field of usefulness for the man who is too busy to look up his subject in a textbook.

Eleventh Annual Report of the Memorial Ophthalmic Laboratory, Giza, Cairo, 1936. Ministry of Public Health. Paper. Price, P. T. 25. Pp. 147, with illustrations. Cairo: Schindler's Press, 1937.

This is a report of the work and activities of the Giza laboratory in Cairo, founded primarily for research in trachoma. The administrative phase of the report is short. The professional report comprises eighty-seven pages, in which may be found a statistical list of pathologic specimens and of interesting cases that were referred to the laboratory for consultation. Many of the latter are described in detail and well illustrated with black and white as well as colored pictures. The most interesting part of the entire report is that devoted to the research work, mainly on the etiology of trachoma, the epidemiology of the acute ophthalmias encountered in Egypt (and there are plenty) and observations on the pathogenesis of spring catarrh. There is so much meat to this section that it does not lend itself well to abstract. The administrative work of an institution that accomplished as much as does the Giza laboratory must be a chore and it seems rather a pity that such time-robbing work should devolve on the shoulders of such a research man as the director, Dr. R. P. Wilson. Ophthalmology suffers from these incursions on his time.

Rose & Carless Manual of Surgery. Edited by William T. Carless, B.S., M.D., F.A.C.S., Professor of Surgery and Director of the Department of Surgery, St. Louis University School of Medicine. American (Fifteenth) edition from the Fifteenth English edition by Cecil P. G. Wakeley, D.Sc., F.R.C.S., F.R.S., Senior Surgeon, King's College Hospital, and John B. Hunter, M.C., M.Chir., F.R.C.S., Surgeon, King's College Hospital, London. Cloth. Price, \$9. Pp. 1536, with 929 illustrations. Baltimore: William Wood & Company, 1937.

This edition of the Rose and Carless Manual of Surgery edited by Coughlin, continues to serve the purpose of a standard textbook on general surgery. It is not only particularly suitable for undergraduate teaching purposes but serves as a reference book for the general practitioner as well. The purpose of the book is not to describe surgical procedure in detail or to present results, but instead to give a rather broad view of the field of general surgery. The book is well written and very understandable.

Gegenwartsprobleme der Augenheilkunde. Herausgegeben von E. Thiel. Unter Mitarbeit von Albrecht, et al. Sammlung der Vorträge vom VIII. Fortbildungskurs für Augenärzte in Frankfurt am Main, 21.-25. Februar 1937. Boards. Price, 16 marks. Pp. 280, with 166 illustrations. Leipzig: Georg Thieme, 1937.

This is a collection of addresses that were given in the eight instruction course for ophthalmologists, held in Frankfurt Feb. 21-27, 1937. As each address is an entity, a review of the subject matter is out of the question. There were twenty-seven lectures, of which a comparatively small number were by ophthalmologists, although the audience was comprised entirely of ophthalmologists. General medical men, neurologists, brain surgeons, psychologists, illuminating engineers and the like talked on the borderline topics of ophthalmology, each in accordance with his own estimation of the mental capacity of the audience. As a result, the caliber of the papers varies enormously. This is at variance with the present day regimentation of the country. The bookmaking is excellent, as are the illustrations, some of which are colored.

L'acétylcholine et l'adrénaline: Leur rôle dans la transmission de l'influx nerveux. Par le Dr. Z. M. Bacq, agrégé de l'Université de Liège. Bibliothèque scientifique belge, Section biologique. Paper. Price, 25 francs. Pp. 114, with 15 illustrations. Paris: Masson & Co, 1937.

This booklet aims to give a modest contribution to the history of epinephrine and acetylcholine in biology, and especially the adrenergic and cholinergic theory of nerve impulses. This is known also as the theory of humoral transmission. Encumbering details are suppressed. Most of the work on these drugs that applies to this theory has been done in the last thirty years. Many of the pioneers are still actively working. The author has worked with many of them and is himself a contributor. He is therefore eminently fitted, by knowledge of the subject, for the task. The story is told clearly, and in French that English readers can easily understand. The history and progress of work in the subject are portrayed in romantic style and given in 100 pages. The evidence for and against the adrenergic and cholinergic theories is given so interestingly that the general reader will welcome it. Those who wish to go deeper will find a list of references to the literature of about twenty-five authors, whose work has revolutionized the theory of nerve impulses.

Methods of Treatment. By Logan Clendenen, M.D., Clinical Professor of Medicine, Medical Department of the University of Kansas. Sixth edition. Cloth. Price, \$10. Pp. 879, with 103 illustrations. St. Louis: C. V. Mosby Company, 1937.

Many of the sections of this edition have been rewritten to include recent advances in therapeutics and materia medica and to bring the text into accord with the eleventh edition of the Pharmacopeia. The book differs from most other textbooks of therapeutics through the inclusion of rather extensive discussions of dietetics, medical gymnastics and massage, hydrotherapy, climate therapy, aerotherapy and heliotherapy. It even contains extensive reference to the better known American spas as well as to certain English, French, German and Austrian spas. There is a large section dealing with psychotherapy. The portion of the book dealing with materia medica discusses drugs under the heading of the various systems of the body and under subheadings according to their action on that system. Similarly, the latter portion of the book deals with various diseases, which are grouped according to the principal system

that is affected. In the preface the author forestalls criticism of minor details. Therefore the following suggestions are not intended to be critical but rather helpful in the formulation of subsequent editions. Epinephrine and ethylene are described as "not official" and while some items which are included in N. N. R. are so indicated, the N. N. R. designation is omitted in mercury oxycyanide, silver arsphenamine and trichlorethylene. The author believes that this is the only book in which therapeutics is so extensively discussed along with materia medica and pharmacology. He pleads that the book represents the judgment and opinion of the author and is not necessarily comparable with the latest therapeutic advances or the most recent consensus. The volume should prove useful to the general practitioner, particularly because of the amount of space devoted to subjects that are not usually included in books on this subject. It should serve as a useful addition to any physician's therapeutic library.

Miscellany

PREVENTION OF DANGEROUS TICK BITES

The principal danger of the tick that carries Rocky Mountain spotted fever in the East lies in its bite. The East has an unusually large number of common dog, or wood, ticks this year, some being reported for the first time from vacant city lots. Even though only one in several hundred of these ticks may carry the fever virus, that one tick, which cannot be distinguished from the rest, may cause a fatal infection. No cure for Rocky Mountain spotted fever is known. Its mortality rate is one out of every five persons infected.

After passing the first part of its life as a small parasite on field mice, the tick waits in tall grass and underbrush for larger host animals. Cutting all grass and underbrush around houses and pathways, therefore, is one way to protect dogs and people from tick bites.

Bites can be avoided by a few simple precautions, according to Dr. F. C. Bishopp of the Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture. Keeping ticks from gorging themselves on the blood of dogs is a protective measure. A pair of forceps is all that is needed in removing ticks from dogs to which only a few have attached themselves. Dusting every five days with derris powder is necessary for dogs supporting a large number of ticks. Ticks should be handled with great care. Infection can be contracted by crushing a tick full of blood from an animal that has had the fever.

Boots laced up over trouser legs protect men walking through tick-infested areas. Ticks are usually picked up from grass or weeds close to the ground.

Ticks always work their way upward before attaching themselves to their human host. The back of the neck and head are their favorite feeding places. Careful examination of heads, especially children's, at least twice a day, will reveal the presence of a tick in time to prevent a fatal bite. Examination of the whole body is necessary after exposure to ticks. An effective way to detick clothes is to place them in a vessel that can be tightly covered, and set on top of them a pan containing half a teacupful of carbon tetrachloride or carbon disulfide. A few hours of such fumigation kills the ticks.

Don't wait for the doctor to remove a tick. The important thing is to get the tick off as soon as possible. Any one can disinfect the bite and the surrounding tissues by inserting into the exact spot where the tick was attached a round toothpick that has been dipped in iodine and drilling it in slightly.

The American dog tick is widely distributed throughout the United States east of the Rocky Mountains, as well as in western and northern California and in parts of Oregon. It is most numerous along the eastern coast from Massachusetts to Florida, especially within a few miles of the shore. Both Texas and Florida have a great many ticks—also some inland areas, such as southern Iowa and parts of Wisconsin and Minnesota. Islands off the coast of Massachusetts and of South Carolina are heavily infested with ticks, especially Martha's Vineyard, Nantucket and Naushon. Tick numbers fall off along the sea coast from Marion, Mass., westward. The Narragansett Bay islands are

heavily infested. A few ticks have been reported on the west side of that bay and as far west as Stonington, Conn. There are large numbers of ticks on Long Island, especially the eastern half, and along Chesapeake Bay in Maryland. They are rarely seen west of Blue Ridge.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Evidence: Admissibility of Hospital Records.—The defendant was charged with performing a criminal abortion. At the trial, over the defendant's objection, the entire hospital record of the complaining witness was admitted in evidence after the record clerk of the hospital had testified that it was a fixed rule of the hospital to keep an individual record for each patient. The record clerk disclaimed any knowledge of the contents of the record but stated that it was prepared by an intern no longer connected with the hospital and whose whereabouts she did not know. The trial court entered a judgment of guilty and the defendant appealed to the Supreme Court of Rhode Island.

In Rhode Island, said the court, a hospital record is admissible in evidence, if properly authenticated, as an exception to the hearsay evidence rule. It is admissible, however, only to the extent that it relates to the diagnosis, treatment and medical history of the case. Before the record is admitted, it must affirmatively appear that such records are regularly kept in the course of the hospital's business, and the person whose duty it was to keep that record, if living, competent and within the jurisdiction of the court, must testify that the entry was made in the regular course of business in his handwriting or under his immediate supervision. If the person who made the entries is dead, incompetent or beyond the process of the court at the time of the trial, other witnesses may identify the record as to how and by whom it was kept. In the present case, the court continued, the evidence failed to show any excuse for the absence as a witness of the intern who made the record. It was shown only that the record clerk did not know where the intern was located and that he was no longer connected with the hospital. The record, therefore, was not properly identified and was for that reason not admissible in evidence.

Furthermore, the court said, a statement in the record that the complaining witness had, on the day before she was admitted to the hospital, gone to a "female abortionist" was clearly a narration of a past event beyond the personal knowledge of the writer of the statement. Too, it tended to establish the commission of the crime for which the defendant was on trial and of which she was presumed to be innocent until proved guilty by competent evidence beyond a reasonable doubt.

The judgment of conviction was accordingly reversed and the cause remanded to the trial court for a new trial.—*State v. Guarneri (R. I.), 194 A. 589.*

Dental Practice Acts: Restrictions on Advertising Not Indefinite.—The Illinois dental practice act prohibits the advertising of free dental service as an inducement to secure patronage, the advertising of prices or fees for services, the use of "cappers" or "steerers" to obtain patronage, the use of specimens of dental work or posters or any other mediums calling the attention of the public to any person engaged in dentistry, and the giving of public demonstrations of methods of practice in any place other than in a regular dental office. The defendant, a licensed dentist, was convicted of violating the act and appealed to the Supreme Court of Illinois.

The act, said the court, does not violate the rule of law that the provisions of an act must be definite and certain. The act forbids certain types of advertising. It then sets out what advertising is permitted. It leaves no doubt about the rights of dentists to advertise, and they may do so only within the limits it sets. The words "cappers" and "steerers" have a

commonly accepted meaning, and the legislature was not bound to define them. When the defendant employed solicitors, a loud speaker, a card trick, a lecture, a sale of tooth powder, with a right to the purchaser to have his teeth cleaned free, and when his agents performed so-called free and painless extractions in an open storeroom into which barkers urged persons passing along the sidewalk, he knew, or should have known, without guessing, that he was violating the plain provisions of the act.

The defendant, in the opinion of the court, was in no position to complain that a provision of the act authorizing a dentist to notify the public that his prices have been reduced on account of a period of economic stress or depression was void for uncertainty, for he was not charged with so advertising when there was no economic stress and depression. Even if this provision were void, it could readily be deleted without invalidating the whole act.

The conviction was accordingly affirmed.—*People v. Dubin (Ill.)*, 10 N. E. (2d) 809.

Cannabis: Sufficiency of Information Charging Sale of Cannabis.—The defendant was convicted under an information charging him with selling "eight cigarettes containing cannabis, from which the resin had not been extracted." He appealed to the Supreme Court of Florida, where an equal division of the court resulted in an affirmation of the conviction.

The uniform narcotic drug act of Florida makes it unlawful for any person to sell cannabis, defined to include "(a) the dried flowering or fruiting tops of the pistillate plant *Cannabis Sativa* L., from which the resin has not been extracted, (b) the resin extracted from such tops, and (c) every compound, manufacture, salt, derivative, mixture, or preparation of such resin, or of such tops from which the resin has not been extracted." Three justices, who thought the conviction should be reversed, pointed out that the information charged only that the defendant sold cigarettes containing "cannabis from which the resin had not been extracted" and that the information was therefore too vague. Said these justices:

The plaintiff in error was charged with selling cigarettes containing cannabis from which the resin had not been extracted, but cannabis is the name of a plant which is dioecious in nature, the dried leaves and flowering tops of the female plant only contain the resin or the properties from which the narcotic drug is produced. . . .

We are of the opinion therefore that the information was insufficient to clearly apprise accused of the nature and cause of the accusation against him because of the sale of cigarettes containing cannabis from which the resin had not been abstracted may relate to the resin of the staminate plant, the resin of which appears to be harmless.

The remaining three justices of the court were of the opinion that the information was sufficient to charge a violation of the act.—*Simpson v. State (Fla.)*, 176 So. 515.

Medical Practice Acts: Validity of Information Stating Charges Disjunctively.—The defendant was convicted of violating the medical practice act of Illinois and sentenced to imprisonment in the county jail for one year and to pay a fine of \$100. After the intermediate appellate court had affirmed the conviction (7 N. E. [2d] 160), the defendant appealed to the Supreme Court of Illinois.

The first count in the information on which the defendant was convicted charged that on a certain date he did "diagnosicate or attempt to diagnosicate, operate upon, profess to heal, prescribe for or otherwise treat an ailment or supposed ailment of another, to wit: did then and there prescribe the taking of certain tablets internally. . . ." The second count charged that he did "unlawfully suggest, recommend, operate upon, profess to heal or otherwise treat an ailment or supposed ailment of another . . . namely: did unlawfully prescribe . . . the taking internally of certain tablets of unknown composition. . . ." The third count charged that he did "unlawfully attach the title 'Doctor,' 'Physician,' 'Surgeon,' 'M.D.' or any other word or abbreviation to his name, indicative that he was engaged in the treatment of human ailments as a business, by unlawfully signing his name 'Shaver, M.D.' . . ." The defendant urged that the information was defective in that the allegations of each count were stated disjunctively. The general rule, said the Supreme Court, is

that charging more than one of several acts in the disjunctive renders the indictment defective for uncertainty. If a defendant is charged in the disjunctive only, there is no definite statement of any fact which constitutes a violation of the law, and the accused is not apprised which charge he is required to meet. But, the court said, in the present case the first count, after alleging several acts in the disjunctive, proceeded with a specific charge, namely, that the defendant prescribed the taking of tablets internally. Likewise, the second count concludes with a specific charge, that of unlawful prescribing. In the same manner the third count, after several disjunctive allegations, makes them specific with the phrase "by unlawfully signing his name 'Shaver, M.D.'" If an information, after disjunctive allegations, reduces them to a specific charge, it is sufficiently definite to charge a violation of the law and to inform the defendant of the nature of the charge against him. In the opinion of the court, the information was sufficient.

The evidence, the court continued, showed the defendant's guilt beyond any reasonable doubt. The health and lives of the people are of the utmost importance. The medical practice act was enacted to safeguard them to prevent their being jeopardized by the very things disclosed by the record in the present case. There were no mitigating circumstances shown, and, in the opinion of the court, a smaller penalty would but tend to condone a grave offense. The punishment was considered therefore not excessive.

The judgment of the appellate court, affirming the conviction, was sustained.—*People v. Shaver (Ill.)*, 11 N. E. (2d) 400.

Society Proceedings

COMING MEETINGS

- American Medical Association, San Francisco, June 13-17. Dr. Olin West, 535 North Dearborn St., Chicago, Secretary.
- American Academy of Pediatrics, Del Monte, Calif., June 9-11. Dr. Clifford G. Grulee, 636 Church St., Evanston, Ill., Secretary.
- American Academy of Tuberculosis Physicians, San Francisco, June 17-18. Dr. Arnold Minnig, 638 Metropolitan Bldg., Denver, Secretary.
- American Association of Industrial Physicians and Surgeons, Chicago, June 6-9. Dr. Volney S. Cheney, Armour and Company, Union Stock Yards, Chicago, Secretary.
- American Association of Medical Milk Commissions, San Francisco, June 13-14. Dr. Paul B. Cassidy, 2037 Pine St., Philadelphia, Secretary.
- American Dermatological Association, Del Monte, Calif., June 9-11. Dr. Fred D. Weidman, 36 Hamilton Walk, Philadelphia, Secretary.
- American Heart Association, San Francisco, June 10-11. Dr. Howard B. Sprague, 50 West 50th St., New York, Secretary.
- American Medical Women's Association, San Francisco, June 12-14. Dr. Helen A. Cary, 1634 N.E. Halsey St., Portland, Ore., Secretary.
- American Ophthalmological Society, San Francisco, June 9-11. Dr. Eugene M. Blake, 303 Whitney Ave., New Haven, Conn., Secretary.
- American Pediatric Society, Bolton Landing, N. Y., June 9-11. Dr. Hugh McCulloch, 325 North Euclid Ave., St. Louis, Secretary.
- American Proctologic Society, San Francisco, June 11-13. Dr. Curtice Rosser, 710 Medical Arts Bldg., Dallas, Texas, Secretary.
- American Psychiatric Association, San Francisco, June 6-10. Dr. W. C. Sandy, State Education Bldg., Harrisburg, Pa., Secretary.
- American Radium Society, San Francisco, June 13-14. Dr. F. W. O'Brien, 465 Beacon St., Boston, Secretary.
- American Rheumatism Association, San Francisco, June 13. Dr. Leif T. Swaim, 372 Marlborough St., Boston, Secretary.
- American Society of Clinical Pathologists, San Francisco, June 9-11. Dr. A. S. Giordano, 531 North Main St., South Bend, Ind., Secretary.
- American Urological Association, Quebec, Canada, June 27-30. Dr. Chas. L. Deming, 789 Howard Ave., New Haven, Conn., Secretary.
- Association for the Study of Allergy, San Francisco, June 9-10. Dr. J. Harvey Black, 1405 Medical Arts Bldg., Dallas, Texas, Secretary.
- Association for the Study of Internal Secretions, San Francisco, June 13-14. Dr. E. Kost Shelton, 921 Westwood Blvd., Los Angeles, Secretary.
- Maine Medical Association, Bar Harbor, June 26-28. Dr. F. B. Carter, 22 Arsenal St., Portland, Secretary.
- Medical Library Association, Boston, June 28-30. Miss Janet D. 2 East 103rd St., New York, Secretary.
- Minnesota State Medical Association, Duluth, June 29-July 1. Dr. E. A. Meyerding, 11 West Summit Ave., St. Paul, Secretary.
- National Tuberculosis Association, Los Angeles, June 20-23. Dr. Charles J. Hatfield, 7th and Lombard Sts., Philadelphia, Secretary.
- New Mexico Medical Society, Santa Fe, June 6-8. Dr. L. B. Coker, 219 West Central Ave., Albuquerque, Secretary.
- West Virginia State Medical Association, White Sulphur Springs, July 11-13. Mr. Joe W. Savare, Public Library Building, Charleston, Executive Secretary.
- Western Branch of American Public Health Association, Portland, Ore., June 6-8. Dr. William P. Shepard, 600 Stockton St., San Francisco, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1927 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them. Titles marked with an asterisk (*) are abstracted below.

Alabama Medical Association Journal, Montgomery

7: 357-396 (April) 1938

- Ptomaine Poisoning: A Mismomer. R. McBurney, University.—p. 357.
Relation of Epithelioma to Chronic Ulceration of the Skin: Report of Five Cases. J. L. Carmichael and L. C. Posey, Birmingham.—p. 361.
Occupational Diseases: Program for Their Control in Alabama. W. F. Queen, Montgomery.—p. 367.
Papilloma of Urethra in an Infant. W. F. Scott, T. A. Collins and P. L. Singer, Birmingham.—p. 370.
Syphilis: Some Observations and Conclusions Drawn from Administration of 120,600 Antisyphilitic Treatments to 4,500 Patients. J. P. Robertson, Birmingham.—p. 372.

American J. of Digestive Diseases, Fort Wayne, Ind.

5: 77-152 (April) 1938

- New Bucketless Lead Weighted Gastroduodenal Tube with Review of the American Contribution to Development of These Tubes. M. Einhorn, New York.—p. 77.
Gastric Relief in Duodenal Ulcer: Accessory Aid in Diagnosis. J. Buckstein, New York.—p. 81.
Effect of Introducing Oxygen into Isolated Colon of a Patient with Chronic Ulcerative Colitis. G. M. Dack and L. R. Dragstedt, Chicago.—p. 84.
Effect of Orange Juice on Gastric Acidity. C. Dimmler Jr. and Marschelle H. Power, with introductory note by W. C. Alvarez, Rochester, Minn.—p. 86.
Protamine Insulin and High Carbohydrate-Low Fat Diet in Diabetes Mellitus. S. Harris and S. Harris Jr., Birmingham, Ala.—p. 88.
Hydrophilic Colloidal Diet. F. M. Pottenger Jr., Monrovia, Calif.—p. 96.
Biliary Tract Lesion of Duodenal Ulcer. N. W. Elton, Reading, Pa.—p. 99.
Gastric Acidity in Chicks with Experimental Gastric Ulcers. G. Cheney, San Francisco.—p. 104.
Some Recent Advances in the Physiology of Gastric Secretion. B. P. Babkin, Montreal.—p. 107.
Report of Apparent Case of Secondary Pellagra. M. B. Holoman and H. I. Silvers, Atlantic City, N. J.—p. 112.
Peptic Ulcer in a Child Following Brain Injury: Case. Frances R. Vanzant and J. A. Brown, Houston, Texas.—p. 113.
Unusual Hematemesis or Gastrorrhagia: Hereditary Hemorrhagic Telangiectatic Dysplasia with Gastrostaxis or Stomachorrhagia (Goldstein's Hematemesis). H. I. Goldstein, Camden, N. J.—p. 115.
Action of Histidine on Gastrointestinal Tract. L. S. Goodman and P. A. Bearg, New Haven, Conn.—p. 117.
*Use of New Antispasmodic Drug in Gastroenterology: Preliminary Report. M. Einhorn, New York.—p. 121.

Antispasmodic Drug in Gastroenterology.—Einhorn substituted diphenylacetyldiethylaminoethanol ester hydrochloride for tincture of belladonna in the treatment of eleven cases of duodenal ulcer, one of gastric ulcer, one of diverticulum of the duodenum, one of cardiospasm, three of cholecystitis, five of colitis (spastic of mucus), one of hyperacidity and one of acute intestinal obstruction. All the patients were free of side effects, such as dryness of the mouth, dilatation of the pupils, palpitation and irregular pulse. No definite relief of pain was reported in the cases of cholecystitis. The results were poor because the pain was intimately associated with the inflammatory process rather than with a spasm. No results were obtained in the cases of cardiospasm because cardiospasm is not a true spasm of the cardia. Good results were obtained in the remaining cases. The patients were relieved of their pain, although this relief cannot be attributed entirely to the drug, since it was used in conjunction with other medication (diets, alkaline powders, and the like). Excellent results were obtained in certain cases in which hiccup was present. This complaint disappeared completely about twenty minutes after the drug was administered intramuscularly. There were no toxic effects, even when the drug was administered over a long period.

American Journal of Medical Sciences, Philadelphia

195: 429-576 (April) 1938

- Natural History of Chronic Hepatitis (Cirrhosis of Liver). A. L. Bloomfield, San Francisco.—p. 429.
Effect of Benzedrine Sulfate on Bowel and Uterus. E. M. Boyd, Kingston, Ont.—p. 445.
*Symptomatic Treatment of Chronic Encephalitis with Benzedrine Sulfate. R. A. Matthews, Philadelphia.—p. 448.
Experimental Pathology of Ergotism, with Reference to Some Newer Ergot Derivatives. R. P. Custer, Philadelphia, with technical assistance of S. Wagoner and C. Eisenhower.—p. 452.
Ergonovine versus Ergotamine as Terminator of Migraine Headaches. W. G. Lennox, Boston.—p. 458.
Diazomethane Poisoning: First Clinical Case Report. F. W. Sunderman, R. Connor and H. Fields, Philadelphia.—p. 469.
Acquired Sensitivity to Cinchophen: Report of Six Cases and a Review. E. S. Sugg, New York.—p. 473.
Comparison of Intracutaneous Reactions in Man to Purified Protein Derivatives of Several Species of Acid-Fast Bacteria. Janet McCarter, H. R. Getz and R. H. Stiehm, Madison, Wis.—p. 479.
Composition of Human Bone in Chronic Fluoride Poisoning. W. A. Wolff and Elizabeth G. Kerr, Philadelphia.—p. 493.
Purulent Typhoid Meningitis with Recovery: Case Report. P. O. Hageman, New Haven, Conn.—p. 497.
Influence of Season and Climate on Mortality of White and Colored Population from Tuberculosis and Acute Respiratory Infections. S. J. Holmes, Berkeley, Calif.—p. 501.
Essential Hypertension in the Negro. M. M. Weiss and J. J. Prusmack, Louisville, Ky.—p. 510.
Observations on Etiology of Toxemias of Pregnancy: III. Lack of Influence of Vitamin B (B₁) on Water Retention in Toxemias of Pregnancy. M. B. Strauss, Boston.—p. 516.
Basal Metabolic Rate of Children with Sydenham's Chorea: Report of Forty-Two Patients. H. C. Lueth, Evanston, Ill.—p. 519.
*Chronic Circulatory Effects of Tobacco and Nicotine. C. H. Thienes and E. M. Butt, Los Angeles, with technical assistance of J. C. Bartlett, R. A. Behrendt, F. Fielding, T. T. Messenger and E. Rollins.—p. 522.
The Lucid Interval and Acute Appendicitis. J. O. Bower, Philadelphia.—p. 529.

Treatment of Encephalitis with Benzedrine Sulfate.—Matthews enumerates the clinical results observed in twenty patients with chronic encephalitis having a parkinsonian syndrome treated with benzedrine sulfate (benzylmethylcarbinamine), eighteen of whom have been receiving the drug by mouth for a period of from six to twelve months. Fifteen patients have shown definite sustained improvement which must be attributed to benzedrine alone, since no change was made in the medical regimen which was previously being carried out. Oculogyric crises were controlled or diminished in frequency and severity in five of six patients. In two patients with myoclonus of the eyelids the symptom was greatly benefited. Thirteen patients have manifested a distinct improvement in mood, have become more cheerful and state that they have more energy. There has been a lessening of rigidity and tremor in a number of patients but this has not been constant and is difficult to evaluate clinically. In four cases salivation has become less troublesome. The results have been encouraging and suggest further investigations. Patients repeatedly reported an aggravation of symptoms when they were without the drug for a few days. Benzedrine enhances the effect of stramonium, atropine and scopolamine and is best used in conjunction with these drugs in the treatment of postencephalitic parkinsonism.

Circulatory Effects of Tobacco and Nicotine.—Experimental and clinical studies supporting the thesis that chronic tobacco or nicotine poisoning leads to degeneration of circulatory organs are poorly controlled and therefore of doubtful value. Experiments of Thienes and Butt show greater vascular degeneration in control animals than in animals chronically poisoned with nicotine. They suggest that acute peripheral vasoconstriction associated with smoking may exaggerate the effect of existing vascular disease on the nutrition of the extremities. Smoking probably does not produce organic disease of the heart. A recent study by Harkavy emphasizes the insecure ground of prescribing "nicotine-free" tobacco for persons who have Buerger's disease. Staemmler reported that he found no vascular lesions in rats chronically poisoned with nicotine, although the adrenals and the testes were markedly affected.

American J. Obstetrics and Gynecology, St. Louis

35: 559-742 (April) 1938. Partial Index

- Value of Hormone Findings in Hydatidiform Mole and Chorionepithelioma. S. A. Cosgrove, Jersey City, N. J.—p. 581.
- Improvements in Paralydehyde Method of Relief of Pain in Labor: Analysis of 500 Cases. E. D. Colvin and R. A. Bartholomew, Atlanta, Ga.—p. 589.
- Wheat Germ Oil Therapy: II. Preservation of Potency, Influence on Labor, Seasonal Needs. E. Shute, London, Ont.—p. 609.
- Dietary Habits During Pregnancy, with Special Reference to Value of Qualitative Food Records. L. W. Sontag, W. H. Seegers and Lois Hulstone, Yellow Springs, Ohio.—p. 614.
- Study of 2,987 Consecutive Episiotomies. N. R. Kretschmar and C. P. Huber, Chicago.—p. 621.
- Effect of Certain Sedatives and Analgesics on Uterine Contractions. F. L. Adair and Sarah A. Pearl, Chicago.—p. 632.
- *Treatment of Habitual Abortion by Progesterone. C. A. Elden, Rochester, N. Y.—p. 648.
- Coincidence of Placenta Praevia and Congenital Malformations. D. P. Murphy, Philadelphia.—p. 653.
- Vitamin B₁ Deficiency as an Etiologic Factor in Pregnancy Toxemias: Preliminary Communication. A. C. Siddall, Oberlin, Ohio.—p. 662.
- Results of Skin Tests for Pregnancy. P. E. Hoffmann and Florence L. Fouch, San Francisco.—p. 680.
- Description of a New Method of Studying Placentation by Amniotic Sac Distention. R. Torpin, Augusta, Ga.—p. 683.
- Chemical Test for Determination of Ruptured Membranes. A. Baptisti Jr., Baltimore.—p. 688.
- *Diagnosis of Trichomonas Vaginalis: Comparison of Cultural Method with Direct Examination of Wet Preparations. T. B. Magath, Rochester, Minn.—p. 694.
- Carcinoma of Cervix with Procidencia: Three Cases. Eleanor Percival, Montreal.—p. 710.
- Air Embolism. J. E. Stroh and M. T. Olinger, Seattle.—p. 711.

Progesterone in Habitual Abortion.—Elden treated eight cases of habitual abortion with from 10 to 44 international units of progesterone during the first six lunar months of pregnancy. No other form of endocrine therapy was used. There was one failure due to an operative laceration of the cervix, and one is not as yet accounted for. Half of the patients had spotting, and one had spotting with cramps. All except one of the infants were apparently normal. Smaller amounts of the glandular product than one unit weekly may be sufficient to carry a pregnancy to term.

Trichomonas Vaginalis.—In order to test the relative merits of the cultural method and direct examination, Magath performed 250 consecutive examinations for the presence of Trichomonas vaginalis. The method of collecting the specimens was to insert two sterile cotton swabs into the vagina and rotate them several times. One was then shaken off in a drop of physiologic solution of sodium chloride on a slide, and a cover glass was applied. Search was made under a magnification of 100 diameters for from one to three minutes. Higher magnification was used for verification. The other swab was plunged into a tube of medium and the tube, with its swab, was incubated for twenty-four hours, after which time wet preparations on slides were made and examined. The results show that the cultural method possesses no advantage over a careful direct examination of the vaginal secretion. Even if both methods are used on each specimen only an occasional additional positive observation will result, not enough to justify the additional time and expense involved in the cultural method.

American Journal of Ophthalmology, St. Louis

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- Senile Changes and Degenerations of Human Eye. B. Rones, Washington, D. C.—p. 239.
- Posterior Sclerotomy as Form of Treatment in Subchoroidal Expulsive Hemorrhage. D. Vail, Cincinnati.—p. 256.
- General Considerations in Radiation Treatment of Skin Cancer in the Region of the Eye. W. L. Watson and W. Wuester, New York.—p. 261.
- Causes of Senile Cataract. E. Jackson, Denver.—p. 264.
- Effective Operation for Entropion in Trachoma. F. Harbert, Philadelphia.—p. 268.
- Relationship of Heterophoria to Divergence and Convergence, Based on Clinical Measurements. F. H. Haessler, Milwaukee.—p. 272.
- Surgical Treatment of Trachoma. V. C. Rambo, Germantown, Pa.—p. 277.
- Ocular Signs of Intracranial Disease in Children and Juveniles: Report of Forty-Two Cases. E. W. Newman, Iowa City.—p. 286.
- Aniridia Congenita, Irideremia: Report of Cases Extending Through Five Generations. E. M. Neher, Salt Lake City.—p. 293.

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- Birth Injuries of Cornea and Allied Conditions. R. I. Lloyd, Brooklyn.—p. 359.
- The Problem of Ocular Tuberculosis. A. C. Woods, Baltimore.—p. 366.
- Leber's Disease: Report of Four Cases in One Family. J. E. Raaf and H. L. Bair, Rochester, Minn.—p. 384.

- A Method of Flicker Perimetry. L. L. Mayer and I. C. Sherman, Chicago.—p. 390.
- Essential Cardiovascular Hypertension as Revealed in 100 Consecutive Examinations of Fundus Oculi. F. T. Tooke and J. V. V. Nicke, Montreal.—p. 395.
- Microsurgery in Chronic Simple Glaucoma. O. Barkan, San Francisco.—p. 403.
- Trachoma in American Samoa. F. Harbert, Lansdowne, Pa.—p. 466.
- Cyst of Posterior Chamber with Microscopic Study of the Eye. E. F. Krug, New York.—p. 413.
- Statistical Survey of 140 Cases of Gonorrheal Ophthalmia, with Data of Sixty-Eight Cases Treated with Nonspecific Protein (Typhoid Vaccine). J. C. Geiger and R. W. Burlingame, San Francisco.—p. 421.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

39: 497-672 (April) 1938

- Laminagraph and Its Variations: Applications and Implications of Planigraphic Principles. Jean Kieffer, Norwich, Conn.—p. 497.
- Body Section Roentgenography with Laminagraph. S. Moore, St. Louis.—p. 514.
- *Ventricular Changes Caused by Proved Tumors of the Brain. R. S. Stone and F. J. Schulze, San Francisco.—p. 523.
- Roentgen Study of Skull in Epilepsy. H. Chor and E. E. Barth, Chicago.—p. 534.
- Historical Review of Roentgen Studies of Gallbladder and Newer Concepts of Diagnostic Criteria Based on 1,000 Cholecystographies (Eighty-One Operated On). L. J. Friedman and P. S. Friedman, New York.—p. 548.
- Aqueous Preparations to Supplant Oil in Roentgenography. H. Lillenthal, New York.—p. 564.
- Benign Bone Lesions Showing Spindle Cell Invasion of Bone: Results of Roentgen Treatment. J. T. Murphy, Toledo, Ohio.—p. 568.
- *Roentgen Therapy of Infections of Nasal Accessory Sinuses. F. M. Hodges, Richmond, Va.—p. 578.
- Roentgen Therapy in Angina Pectoris: Report of Sixty-Five Cases. M. G. Wasch and S. G. Schenck, Brooklyn.—p. 585.
- Dosage Chart for Interstitial Radium Element Needles. L. A. Pomeroy, Cleveland.—p. 590.
- Healing of Gastric Ulcer with Persistence of Niche Roentgenographically. A. S. Unger and M. H. Poppel, New York.—p. 592.
- Boeck's Sarcoid: Report of Case and Brief Review of Literature. F. J. Eichenlaub and I. L. Sandler, Washington, D. C.—p. 596.
- Qualitative Changes in the Formed Elements of the Blood Following Therapeutic Irradiation. K. Kornblum, F. Boerner and S. G. Henderson, Philadelphia.—p. 601.
- Differences in Relative Action of Neutrons and Roentgen Rays on Closely Related Tissues. R. E. Zirkle, Philadelphia, and I. Lampe, Ann Arbor, Mich.—p. 613.
- Secondary Radiation Intensity as Function of Certain Geometric Variables. H. E. Seemann, Rochester, N. Y.—p. 628.
- Spatial Distribution of Radiation from Supervoltage Roentgen Tube: II. K. E. Corrigan, B. Cassen and Henrietta S. Hayden, Detroit.—p. 634.

Ventricular Changes Caused by Tumors of the Brain.—Stone and Schulze present an analysis based on a review of the observations in forty-eight cases in which ventricular studies were made and in which the exact position of the lesion was determined by a subsequent operation or postmortem examination. In forty of these the air was injected directly into the ventricles (pneumoventriculography) and in eight it was injected by the lumbar route (encephalography). The anatomic positions of the lesions were as follows: frontal lobe twelve, motor cortex three, parietal lobe five, occipital lobe six, temporal lobe seven, corpus callosum two, third ventricle four, midline basal five and subtentorial four. The author concludes that nearly all tumors of the cerebral hemispheres cause more or less displacement of the anterior horns and bodies of the ventricles and of the septum pellucidum to the uninvolved side. Such displacements are diagnostic only of the side of the tumor. A displacement of the septum pellucidum to a greater extent than that of the third ventricle is diagnostic of a tumor arising in the frontal lobe. A displacement of the third ventricle to a greater extent than that of the septum pellucidum indicates that the tumor lies in the parietal, temporal or occipital lobe. Posterior displacement of the anterior horn is diagnostic of a tumor arising in the frontal lobe. Depression, with blunting of the superolateral angle of the body of the ventricle, is characteristic of a tumor arising in or near the motor area. A localized depression of the superior surface of the vestibule and the adjoining portion of the body of the ventricle is seen only in tumors involving the parietal lobe. Anterior displacement of the vestibule is indicative of a tumor of the occipital lobe. A complete or partial obliteration of the temporal horn is indicative of tumor involving the temporal lobe, but displacements of the temporal horn may be caused by tumor of other lobes. An acute angulation of the superolateral angle of the body of the ventricle which points superiorly and laterally is found in tumors of the frontal

and temporal lobes. A separation of the lateral ventricles indicates a tumor involving the corpus callosum.

Roentgen Therapy of Nasal Sinusitis.—Hodges shows the value of the roentgen ray as a therapeutic agent in the treatment of carefully selected cases of infections of the nasal accessory sinuses. For fifteen years a preliminary roentgenogram was taken of the sinus of every patient sent in for an examination of the chest unless the pathologic signs found seemed to be sufficient to explain the symptoms, and in all cases in which there was an increase in the bronchovascular shadows of the lower lobe. These roentgenograms disclosed numerous unsuspected infections of sinuses. Many patients with recurring colds were allergic, but most of them showed definite pathologic changes in the sinuses. The common cold that does not clear up after a reasonable time is usually an infection of the sinuses. In the average acute or semiacute infection the routine treatment with astringents, packing, suction, washing and the like has been followed by a clearing up of the condition. In some, however, in spite of the treatment, definite changes have occurred in the sinuses, especially the formation of thick membranes and granulations. This group has responded more favorably to roentgen therapy than any of the other types. The second largest group in which roentgen therapy has been effective is one in which a cough or recurrent colds have appeared for months or years. The roentgenograms show cloudy ethmoids with marked thickening of the mucoperiosteum and some air space. Washing causes little or no change in the appearance of the antrums. Many of these will show an increase in the bronchovascular shadows at the bases of the lungs, some definite infiltration and, in the more chronic ones, early bronchiectasis. In this type of case Osmond, Manges and Rathbone have reported excellent results from roentgen therapy. In acute infections with pus in the sinuses and with dense antrums, but especially in those without too long a history of trouble, the results from roentgen therapy have been so encouraging that it should always be tried since in so many of these the rhinologist must resort to radical surgical intervention for much benefit. The following technic is usually used: 130 kilovolts (peak), 6 mm. of aluminum filter, 25 cm. distance. From 100 to 300 roentgens is given. The dose, dependent on the type of case, is given in three or four treatments in from ten days to two weeks.

Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis 22: 133-268 (March) 1938

- Effects of Castration on Course of Experimental Syphilis in Male and Female Rabbits. J. E. Kemp and C. Shaw, Chicago.—p. 133.
Syphilitic Aortic Insufficiency in Negroes: I. Clinical Studies. L. M. Blackford and C. Smith, Atlanta, Ga.—p. 146.
Id.: II. Electrocardiographic Studies of 128 Patients. C. Smith and L. M. Blackford, Atlanta, Ga.—p. 168.
Penile Mucronary Keratoderma with Abortive Course. F. Blumenthal and W. L. Sherman, Eloise, Mich.—p. 176.
Fever Therapy Plus Additional Local Heating in Treatment of Gonorrhea. F. H. Knusen, L. M. Randall and L. G. Stubler, Rochester, Minn.—p. 185.
Congenital Syphilis. E. Hoffmann, Bonn/Rh., Germany.—p. 198.
Hinton Test of Blood in Neurosyphilis. H. H. Marquis, Boston.—p. 208.
Quantitative Studies on Arsenic Distribution and Excretion After Intravenous Injections of Neosarsphenamine. Ruth M. Kraft, S. Harris Jr., C. S. Robinson and H. Gilliland, Nashville, Tenn.—p. 215.
Treatment of Syphilis: The Patient's Problem. Louise B. Ingraham, Philadelphia.—p. 224.
What Did Five Official Evaluation Studies of Tests for Syphilis Reveal? N. Nagle and J. C. Willett, St. Louis.—p. 231.
Arsphenamine Sensitivity and Vitamin C. D. G. Friend and H. H. Marquis, Boston.—p. 239.

American Review of Tuberculosis, New York 37: 369-464 (April) 1938

- Functional Test in Chronic Pulmonary Disease. B. H. Schlomovitz, A. B. Thompson and L. G. Glickman, Milwaukee.—p. 369.
Tuberculosis of Gums and Cheeks. G. G. Martin and S. W. Koepf, Buffalo.—p. 381.
Thrombosis of Pulmonary Artery: Clinicopathologic Study of Six Cases. J. F. Pou and R. Charr, White Haven, Pa.—p. 394.
Tuberculosis of Cervical Lymph Nodes: Incidence of Its Manifest, Latent and Obsolete Forms in 6,000 Dispensary Patients. B. C. Thompson, Philadelphia.—p. 410.
Bilateral Phrenic Nerve Interruption in Treatment of Pulmonary Tuberculosis. R. V. Cohen and G. Willauer, Eagleville, Pa.—p. 420.
Sex Differences in Tuberculosis Mortality in the United States. C. C. Dauer, New Orleans.—p. 435.
Influence of Sunlight on Experimental Tuberculosis. A. C. Ukil and S. R. Guha Thakurtha, Calcutta, India.—p. 448.

Archives of Internal Medicine, Chicago 61: 523-692 (April) 1938

- Laurence-Moon-Biedl Syndrome: Its Relation to the General Problem of Retinitis Pigmentosa. J. Marmor and R. K. Lambert, New York.—p. 523.
*Metabolism of Vitamin C in Rheumatoid Arthritis. J. F. Rinehart, L. D. Greenberg, Frances Baker, S. R. Mettler, F. Bruckman and F. Choy, San Francisco.—p. 537.
Metabolism of Vitamin C in Rheumatic Fever. J. F. Rinehart, L. D. Greenberg, Mary Olney and F. Choy, San Francisco.—p. 552.
Complement Fixation in Amebiasis: Comparative Evaluation in Clinical Practice. M. Paulson and J. Andrews, Baltimore.—p. 562.
Hyperinsulinism and Cerebral Changes: Report of Case Due to an Islet Cell Adenoma of the Pancreas. N. Malamud, Ann Arbor, Mich., and L. C. Grosh Jr., Ypsilanti, Mich.—p. 579.
Clinical Studies in Circulatory Adjustments: IV. Obliterating Pulmonary Arteritis with Secondary Pulmonary Changes and Right Ventricular Hypertrophy: Report of Case with Autopsy. M. A. Rothschild and A. A. Goldbloom, New York.—p. 600.
Renal Insufficiency from Blood Transfusion: II. Anatomic Changes in Man Compared with Those in Dogs with Experimental Hemoglobinuria. E. L. DeGowin, E. D. Warner and W. L. Randall, Iowa City.—p. 609.
Association of Hyperthyroidism with Pulmonary Tuberculosis: Review of Literature and Report of Twenty-Three Cases. E. Rose and H. U. Hopkins, Philadelphia.—p. 631.
Prolonged Meningococcemia: Report of Three Cases. A. Carbonell and E. P. Campbell, Washington, D. C.—p. 646.
Liver and Biliary Tract: Review for 1937. C. H. Greene, M. Plotz and S. A. Localio, New York.—p. 655.

Vitamin C in Rheumatoid Arthritis.—Rinehart and his collaborators analyzed the blood for vitamin C of 120 medical students as "normal" controls, fifty-eight patients with more or less classic rheumatoid arthritis, thirteen with gonorrheal arthritis and twelve with hypertrophic arthritis. They find that the level of the cevitamic acid of the blood plasma during fasting is almost uniformly lowered in rheumatoid and rheumatoid types of arthritis. In the majority of cases the blood level rises after the administration of vitamin C. Usually this rise is delayed. These data indicate the existence of vitamin C deficiency in arthritis of this type, and they believe that the data afford significant support for the thesis that chronic deficiency of vitamin C is an important factor in the etiology of the disease. Some patients appear to present a fundamental fault in the metabolism of vitamin C. The plasma levels during fasting fail to rise after prolonged administration of generous supplements of vitamin C, although the urinary excretion may be relatively high. A lowered renal threshold is a possible mechanism. Low levels of vitamin C are the rule in gonorrheal arthritis. It is suggested that deficiency of vitamin C predisposes to bacterial localization in this group and possibly also in the other groups. In the cases of hypertrophic arthritis the plasma values were almost uniformly high. Apparently deficiency of vitamin C may exist in the presence of an ordinarily adequate dietary intake.

Archives of Otolaryngology, Chicago 27: 395-518 (April) 1938

- Facial Palsy of Otic Origin. A. H. Persky, Philadelphia.—p. 395.
Development of the Optic Capsule: IV. Fossula Post Fenestram. T. H. Bast, Madison, Wis.—p. 402.
*Treatment of Vasomotor Rhinitis and Allied Conditions with Sodium Morrhuate: Preliminary Report. F. E. Fishof, New York.—p. 413.
Continuously Open Eustachian Tube. G. E. Shambaugh Jr., Chicago.—p. 420.
Inflammatory Bronchial Tumors: Report of Case and Review of Literature. B. S. Pollak, Secaucus, N. J.; S. Cohen and A. M. Gnassi, Jersey City, N. J.—p. 426.
Effects of Drugs on Stria Vascularis. W. P. Covell, San Francisco.—p. 438.
Differential Diagnosis of Bacterial Meningitis of Aural and of Nasal Origin. J. C. Yarkin, Philadelphia.—p. 444.
Nasal Ionization: Histologic Studies in Relation to Clinical Evaluation. A. R. Hollender and N. D. Fabricant, Chicago.—p. 452.
Direct Implantation of Free Nerve Grafts Between Facial Musculature and Facial Trunk: First Case to Be Reported. E. P. Cardwell, Newark, N. J.—p. 469.
Closure of Persistent Postoperative Mastoid Fistula with Subcutaneous Pedunculated Flap. L. A. Copps and G. L. McCormick, Marshfield, Wis.—p. 472.
Tuberculosis of Upper Part of Respiratory Tract: Literature of the Past Two Years. G. B. Wood, Philadelphia.—p. 476.

Treatment of Vasomotor Rhinitis with Sodium Morrhuate.—Fishof uses sodium morrhuate as a sclerosing chemical in the treatment of vasomotor rhinitis. The nose is thoroughly cleansed by suction. A 10 per cent solution of cocaine hydrochloride is used to anesthetize and to shrink the

mucosa. By the use of a special double curved needle and a 2 cc. luer-lok or a tuberculin syringe from 0.25 to 0.5 cc. of a 5 per cent solution of sodium morrhuate is injected between the periosteum of the turbinate and the overlying mucosa. The needle is inserted in such a manner that it touches the periosteum. Injections may be given at several points of the turbinate on the same occasion. The slight bleeding on withdrawal of the needle is controlled by placing a piece of cotton in the nasal vestibule. From three to five minutes later suction is applied to remove any clot or secretion that may be present. The immediate effect of the injection is increased nasal discharge, difficult breathing through the nose, slight headache and sometimes a sense of fullness in the head. Dripping into the pharynx can be prevented by the use of a special needle with proper angulation. The coincident burning sensation in the throat can be neutralized by gargling with a 5 per cent solution of sodium bicarbonate. This lasts from about twelve to twenty-four hours. Thereafter there is a gradual improvement of both subjective and objective symptoms. At the end of a week a definite contraction of the mucosa and a great increase in the breathing space is observed. Cocainization of the nose is not necessary when the second or the third injection is given. These injections are given at intervals of one or two weeks. It is rarely necessary to give more than four injections. Seven cases of vasomotor rhinitis are reported in which the disease was refractory to other methods of treatment but responded favorably to injections of sodium morrhuate.

Archives of Pathology, Chicago

25: 445-606 (April) 1938

- Cardiac Contusion: Experimental and Pathologic Study. A. R. Moritz and J. P. Atkins, Cleveland.—p. 445.
- *Typing of Blood and Seminal Stains by Means of Absorption Test. K. E. Landé, New York.—p. 463.
- *Capillary Rupture with Intimal Hemorrhage as a Causative Factor in Coronary Thrombosis. J. C. Paterson, Regina, Saskatchewan, Canada.—p. 474.
- Effect of Certain Arsenates on the Liver. W. C. Von Glahn, F. B. Flinn and W. F. Keim Jr., New York.—p. 488.
- Effect of 1,2,5,6-Dibenzanthracene on Spindle Cell Sarcoma of a Rat. F. A. McJunkin and W. Wolavka, Chicago.—p. 506.
- Fate of Erythrocytes and Granulocytes in the Spleen Following Their Injection into the Blood Stream. H. Wehrle, New York.—p. 514.
- Role of Vitamin B in Resistance. D. Perla, New York.—p. 539.

Typing of Blood and Seminal Stains.—Landé carried out the absorption test on 109 dried blood specimens and ninety-three stains obtained from seminal material, which came from subjects whose blood groups were originally known. In 94.5 per cent of the cases it was possible to determine correctly the group of the blood stains, and in 93.6 per cent of the cases this was possible with the seminal stains. The information obtained through the absorption test occasionally has been sufficient to obtain a confession from the alleged assailant. In certain cases of murder the testimony of the defendant concerning the origin of a blood stain was found to be incompatible with the results of the absorption test, and in several instances the defendant, confronted with such evidence, readily confessed and related his participation in the crime. Such situations and also those which have arisen in cases of disputed paternity in which false accusations of paternity were withdrawn after the plaintiff learned that blood tests were to be applied would bear out the practical usefulness of the absorption test, even though use of the results as evidence in a court of law may not be warranted for the time being.

Capillary Rupture with Hemorrhage in Coronary Thrombosis.—In a previous paper Paterson suggested that intimal hemorrhage is due, rather, to rupture of capillaries which are derived from the coronary lumen; that capillary rupture results both from high intracapillary pressure and from softening of the supporting stroma by atheromatous degeneration and finally because intimal hemorrhage was found at the site of occlusion in nine consecutive cases of recent coronary thrombosis, that it might be the precipitating factor in the formation of the coronary thrombus. He now presents further and more definite evidence in support of this hypothesis. Hemorrhages into the intima of sclerotic coronary arteries have been shown by study of serial sections of six cases to be intrinsic lesions and not the result of intimal erosions. They

are due, apparently, to rupture of capillaries which are derived from the coronary lumen. Intimal hemorrhages have been observed both with and without thrombosis of the adjacent coronary lumen, and in either case they are identical in structure. Intimal hemorrhage has been a common finding in recently thrombosed coronary arteries, hemorrhage of some degree having been found in thirty-two of thirty-seven consecutive cases. The microscopic observations suggest strongly that intimal hemorrhage (or the other sequelae of capillary rupture) is intimately concerned with the etiology of most coronary thrombi. If the proper conditions of stagnation and eddying of blood exist at a given point in the coronary system capillary rupture with its sequelae occurring in the same region may precipitate thrombosis. Capillary rupture may initiate thrombosis of a coronary artery by diffusion of the blood from an intimal hemorrhage into the lumen, by necrosis or erosion of the intima from damage to its capillary circulation or by retrograde capillary thrombosis. Any one or all of these factors may operate in an individual case.

Iowa State Medical Society Journal, Des Moines

28: 127-168 (April) 1938

- Diseases of Pericardium. H. L. Smith, Rochester, Minn.—p. 138.
- Medicolegal Aspects of Alcoholism. H. W. Morgan, Mason City.—p. 139.
- Röntgen Therapy in Certain Infections. D. M. Earl, Iowa City.—p. 142.
- Résumé of Sulfanilamide. C. C. Jones, Des Moines.—p. 144.
- Hypertrophic Pyloric Stenosis in Adults. J. L. Kestel, Waterloo.—p. 147.

Journal of Allergy, St. Louis

9: 211-320 (March) 1938

- Evidence of Group Specific and Species Specific Sensitization to Pollen. G. D. Grubb and W. T. Vaughan, Richmond, Va.—p. 211.
- Lipids of Blood Plasma in Hay Fever and Asthma: II. Unsaturated Fatty Acids in Fat, Phospholipid and Cholesterol Esters. W. R. Bloor, A. G. Blake and S. S. Bullen, Rochester, N. Y.—p. 227.
- Serum Cholesterol in Allergy. R. Chobot and H. D. Dundy, New York.—p. 231.
- Significance of Developmental Growth Studies in Evaluation of Clinical Allergy. T. W. Todd, Cleveland.—p. 234.
- Use of Staphylococcus Toxoid in Treatment of 100 Cases of Acne Vulgaris. S. Tanenbaum, A. L. Joyner, J. A. Speed and K. M. Bremer, Durham, N. C.—p. 241.
- Correlation of Clinical and Pathologic Findings in Bronchial Asthma. E. T. Thieme and J. M. Sheldon, Ann Arbor, Mich.—p. 246.
- Prevention of Dermatitis Venenata Due to Poison Ivy in Children: Comparison of Value of Single and Multiple Injection Methods. M. Molitch, Philadelphia, and S. Poliakoff, Jamesburg, N. J.—p. 270.

Journal of Bone and Joint Surgery, Boston

20: 263-558 (April) 1938. Partial Index

- Opposition of Thumb. S. Bunnell, San Francisco.—p. 269.
- Operation to Improve Function in Quadriceps Paralysis. C. C. Yeung, Pittsburgh.—p. 314.
- "Spondylodesis": Use of Short Bone Graft in Fusion of Tuberculous Spine. J. de Mol van Otterloo, 's-Gravenhage, Netherlands.—p. 329.
- Enlargement of Ligamentum Flavum: Cause of Low Back Pain with Sciatic Radiation. H. A. Brown, San Francisco.—p. 325.
- Procedure for Correction of Internal Rotation of Thigh in Spastic Paralysis. H. A. Durham, Shreveport, La.—p. 339.
- Treatment of Slipping of Upper Femoral Epiphysis with Minimal Displacement. P. D. Wilson, New York.—p. 379.
- Correction of Scoliosis by Distractor Apparatus. J. Donaldson, Elizabethtown, Pa., and O. A. Engh, Washington, D. C.—p. 405.
- Treatment of Localized Fibrocystic Cavities in Bone by Curettage and Packing with Bone Chips. W. E. Swift and H. Hallock, New York.—p. 411.
- Tensile Strength of Anterior Longitudinal Ligament in Relation to Treatment of 132 Crush Fractures of Spine. A. G. Davis, Erie, Pa.—p. 429.
- *Cellulose-Compound Casts Used in Treatment of Arthritis. R. J. Joplin, Boston.—p. 439.
- Hip Fractures: Valgus Position—Accidental or Engineered. F. J. Cotton and G. M. Morrison, Boston.—p. 461.
- Bone Plate Which Will Not Break or Bend. G. W. Hawley, Westport, Conn., and R. D. Padula, Norwalk, Conn.—p. 469.
- Method for Skeletal Traction to the Digits. G. M. Taylor and A. J. Neufeld, Los Angeles.—p. 496.
- *Modification of Traction Treatment of Sacro-Iliac Strain. A. H. Warner, Woodside, Long Island, N. Y.—p. 503.
- Spinal Hyperextension Litter. R. D. Padula, Norwalk, Conn.—p. 527.

Cellulose-Compound Casts in Arthritis.—Joplin used the cellulose-compound bandage (preliminary report by Thorndike and Garrey abstracted in THE JOURNAL April 16, 1937, p. 1316) for forty-two cellulose-compound casts in the treat-

ment of twenty-four patients with arthritis. In the treatment of both bed and ambulatory patients with arthritis, cellulose-compound casts and cylinders have proved a valuable adjunct to physical therapy. A patient who was bedridden with rheumatoid arthritis had ankylosis of both hips and of the right knee and was unable to sit or to stand. Arthroplasties of the left hip and knee were performed. Physical therapy was started in the Hubbard tank as soon as the wounds had healed, but the patient complained of severe pain in the left knee. All active motion was stopped until a cellulose-compound cylinder was applied. With this waterproof, light-weight support, painless exercise under water was carried out regularly and effectively. In the treatment of aged patients with osteo-arthritis and ambulatory patients with arthritis of the knees whose joints are quiescent when the patients are recumbent but become swollen and painful on attempted walking, so-called walking cylinders have been used with excellent results.

Traction Treatment of Sacro-Iliac Strain.—Warner has found the following contrivance simple, convenient and practicable for home treatment of sacro-iliac strain. The inner tube of a tire is placed round the footboard of the bedstead at the level of the upper surface of the mattress. Two loops, about 8 inches in diameter and made of canvas tape or a trouser belt, encircle the inner tube perpendicular to its length. The feet of the patient are placed in the loops, so that the tape hooks above the ankles, the calcaneal tubercles and the toes. The two loops are about 18 inches apart. The foot of the bed is elevated into reverse Fowler's position, and the patient pulls himself toward the dependent head of the bed sufficiently to apply tension on the rubber inner tube. In this way the patient's body weight opposes the pull of the inner tube. This position can be maintained for hours at a time without discomfort to the patient. It will usually be found necessary for the patient to pull himself to the head of the bed every once in a while, as the inner tube pulls him the other way.

Journal of Immunology, Baltimore

34: 281-356 (April) 1938

- Bacteriolysis by Lysozyme. E. H. Boisson, Utrecht, Netherlands.—p. 281.
- Studies on Serum Fractions: V. Fraction of Antidiphtheric Horse Serum Precipitable by Diphtheric Toxin and That Precipitable by Antiserum Prepared with Floccules of Diphtheric Toxoid-Antitoxin. K. Ando, K. Manako and S. Takeda, Dairen, Manchuria.—p. 295.
- Id.: VI. Close Serologic Relationship of Different Antibacterial Antibody-Globulins. K. Ando, S. Takeda and M. Hamano, Dairen, Manchuria.—p. 303.
- Specificity of Some Mammalian Spermatozoa. W. Henle, Philadelphia.—p. 325.
- Constituent of Peptone Broth as Cause of Cross Reactions with Antiserums Prepared Against Group C (Lancefield) Hemolytic Streptococci. Eleanor A. Bliss, Baltimore.—p. 337.

Journal Industrial Hygiene & Toxicology, Baltimore

20: 269-332 (April) 1938

- Formation of Oxalic Acid from Ethylene Glycol and Related Solvents. F. H. Wiley, W. C. Hueper, D. S. Bergen and F. R. Blood, Wilmington, Del.—p. 269.
- *Air Purification in Inhabited Rooms by Spraying or Atomizing Hypochlorites. A. T. Masterman, London, England.—p. 278.
- Gases from Carbon Arcs. R. W. Coltmann, Cleveland.—p. 289.
- Biologic Effects of Inhalation of Carbon Arc Fumes. E. L. MacQuiddy, J. P. Tollman, L. W. La Towsky and M. Bayliss, Omaha.—p. 297.
- Combustion Products of Carbon Arc. E. L. MacQuiddy, J. P. Tollman, L. W. La Towsky and M. Bayliss, Omaha.—p. 312.
- Ventilation of Motion Picture Booths. P. Drinker and J. R. Snell, Boston.—p. 321.

Purification of Air by Spraying or Atomizing.—Masterman carried out experiments to test the bactericidal effect of spraying dilute hypochlorite in room air. Chemical experiments showed that heating such a solution failed to promote the production of hypochlorite beyond that already in the solution. Bacterial deposits on Petri dishes with and without the hypochlorite spray showed that the hypochlorite caused a reduction in the bacterial count up to 90 per cent in a few hours. A control experiment in which plain water was sprayed gave a reduction of only 32 per cent after five hours. This method offers a cheap and effective procedure for the purification of air in occupied rooms. The active chlorine in the solution was 10.8 Gm. per liter.

Journal of Lab. and Clinical Medicine, St. Louis

23: 663-774 (April) 1938

- Inadequacy of Conjunctival Smears in Diagnosis of Slight Vitamin A Deficiency in Adults. J. B. Youmans, M. B. Corlette, Mildred G. Corlette and Helen Frank, Nashville, Tenn.—p. 663.
- Trichinosis: Distribution of Trichinella Spiralis in Pork Products Sold in Philadelphia. A. Dickman, Philadelphia.—p. 671.
- *Correlation of Clinical Diagnosis and Postmortem Findings in Trichinosis. M. M. Schapiro, B. L. Crosby and Margaret M. Sickler, Washington, D. C.—p. 681.
- Importance of Concentration Preparations of Leukocytes in Study of Leukopenias. R. L. Haden, Cleveland.—p. 687.
- Relationship Between the Chlorides and Nitrogenous Waste Products in the Blood. M. Teitelbaum, Ann Arbor, Mich.—p. 689.
- *Method of Studying Some of the Physiologic Actions of Benzedrine Sulfate: Report of Ten Cases. E. Davidoff and E. C. Reifenshtein Jr., Syracuse, N. Y.—p. 700.
- Cholesterolemia in Blood Plasma of Normal Man. P. G. Schube, Naomi Raskin and Eleanor Campbell, Boston.—p. 711.
- Pentothal Studies with Special Reference to Electrocardiogram. R. Kohn and L. Lederer, Chicago.—p. 717.
- Laboratory Diagnosis in Chronic Gonorrhea of the Female. Frances Jacobsen, H. C. Mason and L. Arnold, Chicago.—p. 729.
- Concentration of Tubercle Bacilli from Sputum by Chemical Flocculation Methods. J. H. Hanks, H. F. Clark and H. Feldman, Washington, D. C.—p. 736.
- Use of Index of Hemolysis in Expressing the Fragility of Erythrocytes. T. R. Waugh and E. G. Asherman, Montreal.—p. 746.
- Method for Collection of Peripheral Blood Samples. Marjory I. Andersen, Denver.—p. 751.
- Color Photography and Its Application in Medical Teaching. H. Jeter and W. M. Hull, Oklahoma City.—p. 753.
- Intradermal Antuitrin-S in Children. I. P. Bronstein, Chicago.—p. 756.
- Sterilization of Sodium Bicarbonate Solution for Intravenous Use in Acidosis. F. E. Holmes and G. E. Cullen, Cincinnati.—p. 761.
- Reaction of Serums of Different Animals to Kahn, Kline, Ide, Eagle and Laughlin Tests. R. A. Greene, H. B. Harding, W. T. Hudspeth and W. J. Pistor, Tucson, Ariz.—p. 763.

Postmortem Observations in Trichinosis.—Schapiro and his associates correlate the response of the intracutaneous skin test of Bachman with that of postmortem observations in trichinosis. In the entire series of 400 cases the cutaneous test failed to detect the presence of trichinae in only two instances; both cases, on diaphragm examination, being found to be lightly infested, long-standing cases. Of the seventy-three cases which showed a positive cutaneous test, three were found to be negative at necropsy. Statistically, these values may be interpreted as indicating that for the diagnosis of positive cases the test is of value in 89 per cent of the cases, whereas as a negative test it is of value in 97.8 per cent of the cases. The three cases which responded positively to the cutaneous test but were found to be negative at necropsy may be explained as false positives, possibly because of parasitism by related nematodes or because of a nonspecific type of reaction. The exact cause of false positives is not understood and needs further study. However, the incidence in this series is enough to condemn the test. Another and more logical explanation of these three cases is that in some instances the infestation may be so light as to be missed entirely on microscopic examination. Furthermore, encystment may occur in muscles other than the diaphragm and thus escape detection on necropsy. The two false negatives are not so easily explained. Individual peculiarities in the immunologic response to the presence of foreign protein in the body must be considered. Since there was light infestation in both cases, it may be assumed that the antigen used was too dilute to detect such light sensitivity. On the other hand, in long-standing cases of light infestation the individual tendency may be toward a complete loss of sensitivity. The relationship of the wheal reaction in the skin to the extent of eosinophilia and to the changes in the diaphragm was quite consistent throughout the entire series. The correlation between the extent of the cutaneous reaction and the degree of eosinophilia in the patient indicated a higher degree of eosinophilia in those cases in which a strong cutaneous reaction (more than 10 mm. in diameter) was produced.

Physiologic Actions of Benzedrine Sulfate.—Ten typical protocols are presented by Davidoff and Reifenshtein to illustrate some of the physiologic actions of benzedrine sulfate studied clinically. Unpredictable increase or decrease in both the systolic and the diastolic levels occurred together or independently. Increased levels are more frequent. Increase or decrease in pulse rate occurred, not necessarily concomitant with blood pressure variations. Arrhythmias were observed occasionally. There was an increase or decrease in the fre-

quency of urinary action and an increase or decrease in the amount of excretion. A decrease in body weight occurred in most subjects with an occasional marked increase following discontinuance of the drugs. The changes of the skin, mucous membranes and vasomotor system included flushed face, sweating of the hands, greasiness of the skin, dizziness, dryness of the mouth, injection of the conjunctivae, increase in nasal secretion, palpitation and precordial pain. There was a slight increase or decrease in temperature. The basal metabolic rate was more often increased than decreased, but there was no consistent variation. It is recognized that there is variability in the action of both the sympathomimetic and the parasympathomimetic drugs. Benzedrine sulfate appears to be no exception to this. Its unpredictable action suggests that the response of each individual to the drug tends to vary, depending on the interaction of a number of factors rather than on the peripheral action alone. Among these factors might be included the physical constitution, endocrine status, personality makeup, psychologic reaction, existing mechanisms and complex formations and the state of the entire nervous system.

Journal of Nutrition, Philadelphia

15: 321-410 (April) 1938

- Measurement of Efficiency of Diets: New Apparatus and Procedures. E. B. Forbes, R. W. Swift and A. Black, State College, Pa.—p. 321.
- Further Studies on Unsaturated Fatty Acids Essential in Nutrition. O. Turpeinen, Berkeley, Calif.—p. 351.
- Influence of Hydrogenation and of Yeast in Counteracting Cod Liver Oil Injury in Herbivora, and Influence of Salmon Oil on Milk Fat Secretion. C. M. McCay, H. Paul and L. A. Maynard, Ithaca, N. Y.—p. 367.
- Effect of Melting Point of Fat on Its Utilization by Guinea Pigs. C. M. McCay and H. Paul, Ithaca, N. Y.—p. 377.
- Relation of Cellulose and Lignin Content to Nutritive Value of Animal Feeds. E. W. Crampton, Montreal, and L. A. Maynard, Ithaca.—p. 383.
- Effect of Feeding High Levels of Copper to Albino Rats. Ruth Boyden, V. R. Potter and C. A. Elvehjem, Madison, Wis.—p. 397.
- Studies on Vitamin B₁ Requirements of Growing Chicks. A. Arnold and C. A. Elvehjem, Madison, Wis.—p. 403.

Journal of Pediatrics, St. Louis

12: 429-562 (April) 1938

- Rates of Growth, Osseous Development and Mental Development in Cretins as a Guide to Thyroid Treatment. L. Wilkins, Baltimore.—p. 429.
- *Treatment of Scarlet Fever with Specific Antitoxins of Low Protein Content. J. A. Toomey and C. S. Baker, Cleveland.—p. 439.
- Adrenal Sympathicoblastoma in Children, with Special Reference to Biopsy of Sternal Marrow and of Metastatic Nodule in Skull. K. Kato and H. E. Wachter, Chicago.—p. 449.
- General Health at Maturity of Tonsillectomized and Nontonsillectomized Children. Martha Crampton Hardy, Chicago.—p. 463.
- Normal Addis Sediment Count in Children. A. W. Snoke, Rochester, N. Y.—p. 473.
- Tuberculin Reactions in Children. Edith M. Lincoln, Antoinette Raia and Lillian A. Gilbert, New York.—p. 479.
- *Follow-Up Report of Ninety-Nine Children Who Received Fever Therapy for Chorea. Lucy Porter Sutton and Katharine Gray Dodge, New York.—p. 490.
- Method of Diet Analysis: Application in Research and Pediatric Practice. Bertha S. Burke and H. C. Stuart, Boston.—p. 493.
- *Treatment of Meningitis Due to Hemolytic Streptococcus with Sulfanilamide. N. Silverthorne and A. Brown, Toronto.—p. 504.
- Polioymyelitis Occurring Two Years After Vaccination Against the Disease: Report of Case. L. C. Rosenberg, Newark, N. J.—p. 507.
- Death of a Child Following Artificial Fever Therapy. E. Friedman and C. J. Stettheimer, Denver.—p. 514.
- Acute Hemolytic Anemia Developing During Streptococcal Sepsis: Report of Case in Which Sulfanilamide Was Given After Anemia Had Developed. R. M. Greenthal, Milwaukee.—p. 517.
- Sheet Bandage for Treatment of Eczematous Children. H. Vollmer, New York.—p. 522.
- Netting Restraint Over Hospital Crib: Safety Device. J. L. Kohn, New York.—p. 524.
- Intravenous Needle Holder. R. Cohen, Chicago.—p. 527.

Low Protein Antitoxins in Scarlet Fever.—Recently purified and concentrated scarlet fever antitoxins have been manufactured by three different biologic laboratories. All these antitoxins have been used by Toomey and Baker. They have treated 800 cases with one antitoxin, termed antitoxin 1, ninety-two cases with antitoxin 2 and thirty cases with antitoxin 3. The various antitoxins were not available at the same time. Hence the number of cases treated with each kind of antitoxin is not comparable. It was found that the serum reaction rate following the administration of two of these

antitoxins was decidedly decreased as compared with the high serum reaction rate following the use of the old type of scarlet fever antitoxins.

Fever Therapy for Chorea.—Sutton and Dodge compare the results of ninety-nine children who were given fever therapy for chorea to sixty who did not receive this treatment. All of these patients were seen in the first attack, and most of them in recurrences. The first group is composed of forty-eight treated and twenty-three untreated patients whose observation period was from one to three years. The second group consists of fifty-one treated and thirty-seven untreated patients observed from four to six years. The most striking differences are the higher incidence of polyarthritis and deaths from heart disease in both observation periods among the untreated cases. None of the treated patients observed from one to three years had aortic lesions, whereas one of the untreated patients did. In the group observed from four to six years aortic disease developed in one patient compared to six in the untreated group; that is, of those who had organic heart disease in the group observed from one to three years none of the treated patients had aortic disease compared to 16½ per cent in the untreated. In the group observed from four to six years 6½ per cent of the treated group who acquired heart disease had aortic lesions, compared to 46 per cent of the untreated. If these observations are valid the reason may be that the infectious process is inhibited by fever. If fever therapy does modify the course of rheumatic infection in those patients who receive it, it is a far more important therapeutic procedure in this disease than if its value is confined to shortening an attack of chorea.

Treatment of Hemolytic Streptococcus Meningitis with Sulfanilamide.—From 1924 to 1936 Silverthorne and Brown treated ninety-three patients with meningitis due to the hemolytic streptococcus. These patients were treated by one or more of the following procedures: spinal drainage, intravenous dextrose-saline injections, scarlet fever antitoxin and mastoidectomy when indicated. There was only one recovery. Nine patients with streptococcal meningitis during 1937 have been treated with sulfanilamide, a continuous intravenous injection of dextrose-saline injection and daily spinal puncture with drainage. Mastoidectomy was performed in six of the nine cases in which mastoiditis was present. Five of these nine patients have recovered. It is the authors' belief that sulfanilamide has been chiefly responsible for the recovery of these patients.

Kentucky Medical Journal, Bowling Green

36: 125-166 (April) 1938

- Medicine in the Changing Social Order. I. Abell, Louisville.—p. 128.
- Relation of Trauma to Hernia. I. N. Kerns, Louisville.—p. 133.
- Newer Treatment of Burns. R. O. Joplin, Louisville.—p. 134.
- Tetanus and Gas Bacillus Infection. J. A. Kirk, Louisville.—p. 136.
- Symptoms and Control of Traumatic Shock. H. Mahaffey, Louisville.—p. 137.
- Relation of Doctors to Malpractice Suits. C. Bailey, Harlan.—p. 142.
- Where Private Practice Ends and Public Health Begins. W. B. Atkinson, Campbellsville.—p. 147.
- Diagnosis and Management of Diabetes Mellitus. L. Bach, Newport.—p. 152.
- Broader Phases of Bronchoscopy. M. G. Buckles, Louisville.—p. 155.
- Aural Aspergillosis: Case Reports. B. N. Pittenger, Paris.—p. 161.
- Schaltung of Complexes. L. I. Hallay, McClure, Va.—p. 163.

New Orleans Medical and Surgical Journal

90: 575-638 (April) 1938

- Malignancy of the Central Nervous System. G. C. Anderson, New Orleans.—p. 575.
- Malignancies of Bones. I. Cohn, New Orleans.—p. 577.
- Cancer of the Skin. J. K. Howles, New Orleans.—p. 580.
- Carcinoma of the Stomach. U. Maes, New Orleans.—p. 584.
- Carcinoma of the Large Intestine. J. D. Rives, New Orleans.—p. 587.
- Carcinoma of the Cervix. H. E. Miller, New Orleans.—p. 589.
- Malignancies of Kidneys, Bladder and Prostate. E. Burns, New Orleans.—p. 591.
- The Present Status of Radiation Therapy in Cancer. M. D. Teitelbaum, New Orleans.—p. 593.
- Childhood Tuberculosis. C. Lorio, Baton Rouge, La.—p. 595.
- Treatment of Schizophrenic Reactions with Metrazol: Preliminary Report. T. A. Watters, Grace A. Goldsmith and L. A. Golden, New Orleans.—p. 601.
- Abdominal Cesarean Section. W. F. Guerriero, Monroe, La.—p. 604.
- The Clinic of Professor René Leriche. M. DeBakey, New Orleans.—p. 606.
- A. Saldarriaga, Colombia, South America.—p. 606.
- Medical Fads and Fallacies. S. W. Douglas, Eudora, Ark.—p. 609.

Public Health Reports, Washington, D. C.

53: 551-586 (April 15) 1938

Frequency of Sickness and Nonindustrial Accidents Causing Disability Lasting Eight Calendar Days or Longer Among 60,000 White Male Railroad Employees, 1930-1934, Inclusive. W. M. Gafafer.—p. 555.
Occurrence of Tularemia in Rabbit Tick (*Haemaphysalis leporis-palustris*) in Alaska. C. B. Philip and R. R. Parker.—p. 574.

Rhode Island Medical Journal, Providence

21: 59-72 (April) 1938

Recent Concepts of Cancer Treatment. P. P. Chase, Providence.—p. 59.
Some Theoretical and Therapeutic Considerations of the Anemias. E. L. Sielke, Howard.—p. 61.

Southern Surgeon, Atlanta, Ga.

7: 97-184 (April) 1938

Sciatica and Low Back Pain: Study of Thirty-One Consecutive Cases in Which Twenty-Four Were Due to Displaced Intervertebral Cartilage. E. F. Fincher and E. B. Walker, Atlanta, Ga.—p. 97.
Surgical Treatment of General Peritonitis by the Handley Operation. C. G. Heyd, New York.—p. 106.
Bilateral Pneumothorax and Extensive Subcutaneous Emphysema Complicating Gastric Resection: Report of Case. J. R. Phillips, G. W. Waldron and Frances R. Vanzant, Houston, Texas.—p. 118.
Diagnosis and Management of Acute Gallbladder Disease. J. D. Hancock, Louisville, Ky.—p. 121.
Physiologic Rest in the Early After-Care of Poliomyelitis. C. E. Irwin, Warm Springs, Ga.—p. 125.
Safety Pin in Alimentary Tract: Diagnosis, Treatment, Dangers, Complications. M. F. Arbuckle and A. C. Stutsman, St. Louis.—p. 131.
Use of Silk Sutures for Abdominal Wounds. M. Thompson, Louisville, Ky.—p. 136.
Hypertension and Its Surgical Treatment. W. M. Craig, Rochester, Minn.—p. 140.
Simplified Fracture Frame. F. F. Rudder, Atlanta, Ga.—p. 149.
Shock or Peripheral Circulatory Failure. A. Blalock, Nashville, Tenn.—p. 150.
Ambulatory Treatment of Fractures of Lower Extremity. R. A. Griswold, Louisville, Ky.—p. 157.

Hypertension and Its Surgical Treatment.—Craig states that 136 patients with hypertension have been operated on in the Section on Neurologic Surgery at the Mayo Clinic by means of subdiaphragmatic extensive sympathectomy, without an operative death and with only four subsequent deaths. Clinical improvement after operation varied according to the progress of the disease, the age of the patient and the amount of vascular cardiac and renal damage. Suitable preoperative tests have been devised to measure the amount of potential physiologic response to sympathetic denervation, and these tests have prevented unsuccessful operations and indicated those cases in which a sufficient lowering of the blood pressure or relief of clinical symptoms would take place to make operation justifiable. Operation is advised only for patients whose blood pressure responds satisfactorily before operation to: 1. The slow and intermittent intravenous injection of a 5 per cent solution of pentothal sodium (sodium methylbutyl thiobarbiturate) until there is no further drop in the blood pressure; ordinarily from 500 to 1,000 mg. is injected. 2. The administration of 3 grains (0.2 Gm.) of sodium amytal each hour for three successive hours. 3. The administration of half a grain (0.032 Gm.) of sodium nitrite at intervals of half an hour until six doses have been given. 4. Hourly determinations of blood pressure during rest and sleep for a minimum of twenty-four consecutive hours. If the blood pressure decreases to normal or to nearly normal as a result of all these measures, the patient may be considered a satisfactory candidate for operation; if not, the effect of operation is almost certain to be unsatisfactory. Operation is contraindicated when the patient is more than 50 years of age and has congestive heart failure, angina pectoris, marked renal insufficiency and/or advanced arteriosclerosis.

Southwestern Medicine, El Paso, Texas

22: 125-164 (April) 1938

Tumors: General Considerations. G. W. Jones, Philadelphia.—p. 125.
The Menopause: Diagnostic and Therapeutic Problems. E. L. Sevringhaus, Madison, Wis.—p. 128.
Degenerative Goiter Heart. A. E. Hertzler, Halstead, Kan.—p. 131.
Trichomonas Vaginalis Infestation in the Male. R. F. Thompson, El Paso, Texas.—p. 133.
Hypertrophia. W. G. Shultz, Tucson, Ariz.—p. 135.
Treatment of Empyema. V. S. Randolph, Phoenix, Ariz.—p. 138.
Conservative Management of Sinus Trouble. E. H. Brown, Tucson, Ariz.—p. 140.

Surgery, St. Louis

3: 485-644 (April) 1938

Some Accomplishments of Thoracic Surgery and Its Present Problems. E. A. Graham, St. Louis.—p. 485.
*Use of Muscle Flaps in Closure of Chronic Empyema Cavities. B. N. Carter, Cincinnati.—p. 506.
End Results of High Ligation and Injection in Treatment of Varicose Veins. H. H. Faxon and D. W. Barrow, Boston.—p. 518.
Varicose Veins, with Special Reference to Treatment by Ligation, Stripping and Injection. E. Horgan, Washington, D. C.—p. 528.
Some Experimental Observations Relating to Visceral Pain. R. M. Moore, Galveston, Texas.—p. 534.
Carcinoma of Jejunum: Report of Case. H. M. Kern, Baltimore.—p. 556.
Meckel's Diverticulum: Review of Twenty Cases with Report of Cases. J. deJ. Pemberton and L. K. Stalker, Rochester, Minn.—p. 563.
Importance of Hematemesis Accompanied by Pyloric Obstruction. A. Bassler, New York.—p. 568.
Psoas Abscess of Appendix. H. McCorkle, San Francisco, and J. Stevenson, Cincinnati.—p. 574.
Right Retromesocolic Hernia. B. Halpert, New Orleans.—p. 579.
Repair of Direct Inguinal Hernia by Osteoperiosteal Graft to the Pectineal Line of the Pubis. J. R. Veal and D. D. Baker, New Orleans.—p. 585.
Experimental Study of Effects of X-Radiation on Acute Pyogenic Infection of Skin and Subcutaneous Tissues. J. A. Soto, A. Brunschwig and F. W. Schlutz, Chicago.—p. 593.

Muscle Flaps for Closure of Empyemic Cavities.—Carter emphasizes that adequate drainage by the resection of long segments of several ribs and wide exteriorization of the empyemic cavity is the most important step in the treatment of chronic empyema and calls attention to the advantage of using pedicled flaps of muscle in the closure of the chronic empyemic cavity that remains after adequate drainage has accomplished all it can. The procedure used to obliterate the cavity which persists after thorough drainage and active treatment will depend on the type, the size and the location of such a cavity. The large cavities in the lower portion of the thorax, cavities that lie beneath the scapula and those at the apex of the thoracic cage cannot be closed easily. In these instances flaps of muscles can be swung into the cavity in order to obliterate it. The muscles which are available for this purpose are the latissimus dorsi, the trapezius, the sacrospinalis and the pectoralis. In order to get enough material to fill the cavity it is important that one plan the operation so as to utilize every bit of muscle possible. A useful method of obtaining added bulk of muscle is to make a second incision at right angles to the one which has been placed at the lowermost border of the empyemic cavity, to reflect the cutaneous flaps thus formed, and to cut the muscle which is to be utilized at a considerably lower level. In this way several inches of muscle may be gained. The intercostal muscles should be carefully preserved when possible and likewise utilized as a "fill." They are especially useful to plug bronchial fistulas. If the cavity is not too deep, they may be preserved intact (not divided) and allowed to fall into the floor of the cavity. The thick parietal pleura, because of probable small abscesses and infected sinus tracts, should be excised rather than utilized as material with which to fill the empyemic cavity. Another reason for its excision is that in tuberculous empyema (from 10 to 13 per cent of chronic empyemas) the parietal pleura practically always is the site of tubercles or tuberculous granulating tissue. Unless the empyemic cavity is large, relatively little deformity is present after the operation. The author has found the use of pedicled flaps of muscle to be satisfactory in dealing with the persistent chronic empyemic cavity, in the closure of extrapleural cavities resulting from the excision of cold abscess of the wall of the chest, in the cure of chronic abscesses of the lung and in the secondary closure of infected thoracoplasty wounds in which an extrapleural cavity remains beneath the scapula.

United States Naval Med. Bulletin, Washington, D. C.

36: 163-326 (April) 1938

Logistics: Interrelation of the Medical Service Aboard Ship and Tactics. P. S. Rossiter.—p. 163.
Medical Supply Procurement in the Navy. W. H. Michael.—p. 168.
Medical Department Function in a Naval Engagement. C. J. Holeman.—p. 179.
Fleet Medicine. G. F. Cottle.—p. 193.
Hospital Ships. L. W. Johnson.—p. 197.
The Making of a Bluejacket. G. E. Thomas and C. M. Parker.—p. 233.
Compressed-Air Illness. C. W. Shilling.—p. 235.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Radiology, London

11: 201-272 (April) 1938

- Urography in Pregnancy. E. R. Williams.—p. 202.
Use of Lipiodol in Localization of Spinal Tumors. H. M. Worth.—p. 211.
Further Observations Regarding Familial Multilocular Cystic Disease of the Jaws. W. A. Jones.—p. 227.
Some Observations on Cases of Suprarenal Tumor. M. H. Jupe.—p. 242.
Dosage System for Interstitial Radium Therapy. R. Paterson and H. M. Parker.—p. 252.
Effect of X-Rays on Trypanosomes. L. Halberstaedter.—p. 267.
Model of Radium Unit for Measuring Dosage and Planning Treatments. L. G. Grimmett.—p. 271.

British Journal of Tuberculosis, London

32: 61-132 (April) 1938

- Types of Pulmonary Tuberculosis: II. Creeping Tuberculosis. L. S. T. Burrell.—p. 65.
Extrapleural Pneumothorax. J. E. H. Roberts.—p. 68.
Alveolar Epithelium of the Lung. S. R. Gloyne.—p. 73.
Termination of Artificial Pneumothorax. G. Todd.—p. 76.
Tuberculosis in Jamaica. E. L. Opie.—p. 85.
Control of Rest and Exercise in Pulmonary Tuberculosis. H. Roche.—p. 89.
Air Embolism Complicating Artificial Pneumothorax (Describing a New Automatic Pneumothorax Apparatus). W. Koch.—p. 96.
*Blood Index in Pulmonary Tuberculosis in Women. N. J. S. Nathan.—p. 104.

Blood Index in Pulmonary Tuberculosis.—Nathan applied the blood index of Houghton (depending on the sedimentation rate, the von Bonsdorff count and the polymorph-lymphocyte-monoocyte ratio) in order to determine the prognosis of pulmonary tuberculosis in women. Of the eighty cases taken for consideration, fifty-six gave results the summation of which pointed to an immediate prognosis similar to that deduced from the clinical, roentgenographic and laboratory observations. The remaining twenty-four cases gave divergent readings, thirteen of which showed marked variation during the menstrual stage. Of the remaining eleven cases no reason for the inconsistency in the readings could be found. In thirty of the cases a depression in the index occurred, due to hemoptysis in 10 per cent, to a spread of disease in 74 per cent and to fluid occurring in an artificial pneumothorax in 16 per cent. The blood index always appeared to rise the month following the patient's admission to the sanatorium, during which period she was confined completely to bed. A sudden fall in the blood index should therefore be regarded as an alarming signal. The best time to obtain samples of blood has been found to be immediately after the cessation of the menstrual period, as fluctuations may occur during the premenstrual stage.

British Journal of Urology, London

10: 1-108 (March) 1938

- Malignant Disease of Testicle, with Especial Reference to Neoplasms of Undescended Organ. G. Gordon-Taylor and A. S. Till.—p. 1.
Current Urinary Stone Wave in Central Europe. W. Grossmann.—p. 46.

British Medical Journal, London

1: 605-660 (March 19) 1938

- Genococcus Antitoxin in Treatment of Gonorrhea. E. T. Burke, J. Gabe, A. H. Harkness and A. J. King.—p. 605.
*Human Infection with Actinomyces Caprae. A. G. Gibson, R. H. Rose-Innes and Joan Gibson.—p. 612.
Familial Clubbing of Fingers and Toes. D. R. Seaton.—p. 614.
Treatment of Obliterative Vascular Disease by Intermittent Venous Occlusion: Further Observations. J. J. M. Brown and W. M. Arnott.—p. 616.
Food Poisoning. J. Burnford.—p. 618.

Infection with Actinomyces Caprae.—The patient from whom the Gibsons and Rose-Innes isolated *Actinomyces caprae* was one of two with acholuric jaundice. They are unable to explain the occurrence of *Actinomyces caprae* in the cultures from the excised spleen of case 1 except as a pathogenic agent in intimate relation to the splenic tissue. It is inconceivable that it could have been an accidental invasion or contamination. The number of cases however (now thirteen) from which

actinomyces has been obtained from the excised spleen or liver in acholuric jaundice, splenic anemia and Banti's disease makes it probable that the present organism bears an etiologic relation to the disease. This appears to be the first occasion on which *Actinomyces caprae* has been found in a human case. A thin emulsion, however, made by continual shaking of a twenty-four hour broth culture showed no agglutination as tested against the serum of case 1. The serum added to a broth culture of the organism increased the rate of growth and brought out more prominently the characteristic color of the organism as compared with six normal control serums. The siderotic nodules in the spleen on first exposure were a buff color, but on being incubated in culture tubes under aerobic conditions they assumed the same tint as an old culture on agar. Splenectomy in both cases had the effect of completely relieving the jaundice, restoring the hemoglobin and number of red corpuscles to normal and diminishing the fragility. It is concluded that *Actinomyces caprae* was an essential pathogenic agent in the production of the disease.

Clinical Journal, London

67: 133-176 (April) 1938

- Carcinoma of the Tongue. A. J. Gardham.—p. 133.
Thrombosis of Peripheral Veins in Visceral Cancer. A. P. Thomson.—p. 137.
Nonmedical Treatment of Osteo-Arthritis and Rheumatoid Arthritis. R. Broomhead.—p. 140.
Pyrexia of Uncertain Origin. R. E. Smith.—p. 144.
Treatment of Obesity. R. E. Tunbridge.—p. 154.
*Cullen's Sign in a Case of Antepartum Rupture of a Cesarean Section Scar. E. A. Gerrard.—p. 162.
Role of Radiology in the Early Diagnosis and Treatment of Hydronephrosis and Other Renal Tumors. H. Foy.—p. 163.

Cullen's Sign in Antepartum Rupture of Cesarean Scar.—Gerrard cites a patient who three years previously had been delivered for the first time by cesarean section of the upper segment after an extended trial of labor. The child was still-born and the puerperium was difficult. Her present pregnancy had been uneventful up to the thirty-sixth week, when she began to feel pain in the lower part of the abdomen. Two days previous to the author's seeing her she had had an attack of acute cutting pain which lasted for about four hours. Shortly afterward she noticed a reddish stain at the umbilicus. There had been no vomiting, and as she walked into the clinic for her fortnightly antepartum examination her only complaint was of a slight feeling of soreness. On examination her general condition was found to be excellent. The umbilicus showed a reddish purple stain about the size of a shilling. On palpation the child was found to be lying in a left sacro-anterior position. Despite the patient's excellent condition the presence of Cullen's sign was deemed to indicate intraperitoneal hemorrhage, and a diagnosis of a ruptured cesarean scar was made. The abdomen was opened through a right paramedian incision. On retraction of the rectus the peritoneum in the umbilical region was seen to be infiltrated with blood. Incision of this structure revealed no free blood in the peritoneal cavity, but a clot of blood about 2 inches long and 1 inch broad was found attached to the old uterine scar. The clot was removed, exposing a tear about 1 inch long which had been effectively plugged by the placenta, which was lying immediately beneath it. The site of rupture was extended upward and downward and the child was removed. It breathed a moment or two later. There was profuse hemorrhage, but the uterus retracted well after the placenta was removed and an injection of solution of posterior pituitary and ergometrine was given. The author is inclined to think that in his case there must have been damage to the peritoneum at the time of rupture of the uterine scar due to the clot of blood and the attachment of the placenta to the anterior wall of the uterus.

East African Medical Journal, Nairobi

14: 395-416 (March) 1938

- Treatment of Pulmonary Tuberculosis by Direct Injection of Liquid. H. C. Trowell.—p. 396.
Cyst of the Neck: Case. C. V. Brimbridge.—p. 397.
Severe Postanesthetic Reaction Followed by Facial Paralysis. C. V. Brimbridge.—p. 398.

Indian Medical Gazette, Calcutta

73: 129-192 (March) 1938

- Illustration of Rheumatic Processes in Modern Museum of Pathology. H. Stott.—p. 129.
- Present Position of Opium Smoking Habit in India: Part II. Preparations of Opium Used for Smoking and Mode of Indulgence. R. N. Chopra and G. S. Chopra.—p. 132.
- *Incidence of Bronchiectasis in Asthma. R. Viswanathan.—p. 138.
- Ichthyol as Treatment of Guinea Worm. R. N. Gore.—p. 139.
- Adult Hemoglobin Standards in Burma. C. F. J. Cropper and B. S. Kahali.—p. 139.
- Spontaneous Infection of Guinea Pigs with *Spirillum* Presumably *Spirillum* Minus Carter, 1887. B. M. Das Gupta.—p. 140.
- Hydrogen Ion Concentration of Human Feces. C. L. Pasricha, R. K. Goyal and S. Lal.—p. 141.
- History of Immunization Against Tuberculosis. L. Nègre and R. K. Goyal.—p. 144.
- Antimalarial Measures in the Railway Area at Delhi. B. L. Chopra.—p. 150.

Incidence of Bronchiectasis in Asthma.—Fifty consecutive cases of asthma, of a duration varying from three to ten years, were investigated by Viswanathan in order to find out the incidence of bronchiectasis. Roentgenograms of the lungs, after iodized poppyseed oil was injected into the bronchi, were taken. Fourteen cases showed definite evidence of bronchiectasis. Six showed saccular dilatation, five cylindric dilatation and three early bronchiectasis with tortuosity of bronchioles and slight cylindric dilatation. In ten of the fourteen cases there was clinical evidence of chronic bronchitis with asthma. But the history was suggestive of the primary condition being asthma. The author suggests that during an asthmatic attack there is a considerable increase in the inspiratory pull on the bronchial walls, particularly on those portions which are weak congenitally or weakened by inflammation. The spasm of the healthy portions of the bronchial wall will only accentuate the irregularity of its contour.

Journal of Hygiene, London

38: 129-268 (March) 1938

- Studies on Influence of Various Organic Substances on Phenol Coefficient. Elsa Jensen and V. Jensen.—p. 141.
- Studies in Tuberculosis in Hong Kong. K. H. Utley.—p. 150.
- Evolution of Fixed Strains of Rabies Virus. P. Lépine.—p. 180.
- Silicosis and Carcinoma of Lung. C. S. Anderson and J. H. Dible.—p. 185.
- Bacteriology of Meat and Fish Pastes, Including a New Method of Detection of Certain Anaerobic Bacteria. E. L. Crossley.—p. 205.
- Diphtheria Immunity in North Greenland 1932-1933. G. Krogh-Lund.—p. 217.
- Thermograph Records in Rooms of Some London Dwelling-Houses Throughout the Year 1935-1936 and Their Comparison with Temperatures Recorded in Outdoor Meteorologic Stations. C. G. Johnson.—p. 222.
- Cotton and Plague in Uganda, with an Appendix on Postmortem Examinations of Rats Used in Experiments. G. H. E. Hopkins and R. S. F. Hennessey.—p. 233.
- *Cross Infection in Diphtheria Wards. V. Glass and H. D. Wright.—p. 248.
- Fate of Mineral Oils Injected into Peritoneal Cavity of Mice. C. C. Twort and J. M. Twort.—p. 255.
- *Incidence of Brucellosis Clinical and Latent Among Various Groups of Population. C. P. Beattie.—p. 260.

Cross Infection in Diphtheria Wards.—Glass and Wright show that cross infection occurred in 36.6 per cent of 246 patients in diphtheria wards. In patients who were in the hospital longer than two months it occurred in 68 per cent. Persistence of diphtheria bacilli in the upper part of the respiratory tract was responsible for prolonged hospitalization in 76 per cent of the cases. In 80 per cent of these cases this persistence was a result of cross infection. The results indicate that cross infection in the diphtheria wards of hospitals for infectious diseases is not uncommon. To the patient admitted in error to a diphtheria ward it offers certain dangers and this provides an argument for the reception of dubious cases into special observation wards. To the diphtheria patient, however, reinfection appears to be associated with little or no risk in contrast to reinfection with scarlet fever streptococci. From the point of view of hospital administration cross infection is a matter of considerable importance. The difficulty of cross infection might be overcome by hospitalizing the patients in different wards according to the type of infecting organism.

Incidence of Brucellosis.—Beattie records certain observations on the relative frequency of *Brucella* infection in different occupational classes and correlates this with the path

(ingestion and contact) of infection and the dose of organisms. The first group that he considers is the population as a whole. Infection among them must, in this country, be mainly by ingestion. The opportunity for infection is great since from 20 to 35 per cent of raw milk contains *Brucella abortus*. The organism is, of course, killed by efficient pasteurization. In England and Wales from 1928 to 1935 Dalrymple-Champneys (1935) recorded 255 cases of undulant fever. In Scotland, from 1929 to the end of 1935, 108 cases have been reported by the author and others. Nor is latent brucellosis common. Serums submitted for the Wassermann reaction have been tested for the presence of agglutinins for *Brucella abortus*. Cruickshank and Barbour found 2.4 per cent to react in a titer of 1:20 or higher, Smith 4.6 per cent and Tulloch 2 per cent. The reasons for this low incidence of infection may be that, although a large proportion of milk contains *Brucella abortus*, the concentration of the organism is not high and ingestion is not the most dangerous route of infection. An examination of the serums of thirty-seven farm workers, slaughterers and butchers showed agglutinins present in two in a titer of 1:25. This shows that the incidence of brucellosis among slaughterhouse workers and possibly among farm workers is somewhat greater than the incidence among the population as a whole. Members of the veterinary profession run a great risk of contracting infection when they engage in the removal of placentas or assist in calving, yet few show clinical signs of infection. Of 108 cases of undulant fever recorded in Scotland only one was in a veterinary surgeon. In England and Wales Dalrymple-Champneys has heard of two veterinary surgeons and one veterinary student who have contracted undulant fever out of a total of 314 cases. When specific inquiries have been made among groups of veterinarians as to the previous occurrence of an illness having the clinical features of undulant fever, more cases have been disclosed. Thus of forty-nine practicing veterinarians in the United States Huddleson and Johnson considered that three had previously had undulant fever. Jordan found three out of 120. Thomsen in Denmark from among twenty-nine recent graduates found three who had a disease of the symptomatology of undulant fever, and among 182 veterinary students the author found one who definitely had undulant fever and two who gave a history which, combined with a high serum agglutination titer, warranted a retrospective diagnosis of undulant fever. He has examined the serums of students attending a veterinary college. In many cases the examination was repeated in subsequent years. Of the postgraduate students 58.3 and 10.8 per cent of the undergraduate veterinary students were found to have agglutinins for *Brucella abortus* in their serum. This should be borne in mind when a diagnosis of undulant fever is considered in a member of the veterinary profession.

Journal of Laryngology and Otology, London

53: 225-282 (April) 1938

- Lympho-Epitheliomas. J. I. M. Black.—p. 225.
- Operative Treatment of Chronic Mastoid Disease. S. Hastings.—p. 246.

Journal of Tropical Medicine and Hygiene, London

41: 89-108 (March 15) 1938

- Physiology of the Individual in the Tropics. R. N. Chopra.—p. 89.
- Literal Meaning of "Anaphylaxis." K. L. Burdon.—p. 97.
- Rhinitis Spastica Tropicalis (Tropical Hay Fever). A. Castellani.—p. 98.

Lancet, London

1: 649-706 (March 19) 1938

- The Public Health Aspect of Heart Disease in Childhood. B. Schlesinger.—p. 649.
- Bactericidal Changes Induced in Human Blood and Serum by Sulfamido-Chrysoidine and Sulfanilamide. E. D. Hoare.—p. 655.
- Sudden Death from von Gierke's (Glycogen) Disease. E. Gardner and K. Simpson.—p. 659.
- Classification of Pneumonias. L. S. T. Burrell.—p. 662.
- *Thrombosis of Central Vein of Retina Treated with Heparin. N. Holmin and K. G. Ploman.—p. 664.
- *Thrombosis of Posterior-Inferior Cerebellar Artery (Wallenberg Syndrome) Treated with Heparin. J. H. Magnusson.—p. 666.

Thrombosis of Central Vein of Retina.—Holmin and Ploman observed the gradual return of vision in an eye with a thrombosis of the central vein of the retina, after treatment with heparin. The patient was given intravenous injections of heparin. On the tenth day of treatment the patient had no

subjective symptoms. Delimitation of the papilla was only slightly indistinct. The veins were somewhat dilated. Papillary hemorrhages were still visible, though reduced in size, paler and thinner. Otherwise there were no hemorrhages anywhere in the fundus. Vision was 0.9 (—0.5) and a month later 1 (—0.5).

Thrombosis of Cerebellar Artery.—Magnusson treated with heparin a severe case of Wallenberg's syndrome—i. e., a thrombosis of the left posterior-inferior cerebellar artery, with a lesion of the circumferential and intermediate zones of the medulla oblongata. The patient was given intravenous injections of 150 mg. of a 5 per cent solution of standard heparin. No reaction followed this or subsequent injections of the same dose given three times a day for five days. The patient's condition continued to improve steadily though slowly. Two months after being taken ill she could walk up and down the hospital passage with support, and diplopia was no longer present. In another month she could just walk up and down the passage without support. Romberg's test (aggravated) was negative. The paresthesia remained but was less pronounced than formerly. Sensitivity to pain and heat and cold appeared to be normal only in the right half of the chest and abdomen and in the upper part of the right arm. Considering the usual prognosis in the disease, it is striking how rapid the improvement was after the heparin treatment. The possibility that the effect was due to suggestion is excluded by the mental condition of the patient.

Medical Journal of Australia, Sydney

1: 465-508 (March 12) 1938

- Psychiatry in the Soviet Union. R. S. Ellery.—p. 470.
Analysis and Treatment of Static Foot Defects. E. B. M. Vance.—p. 476.
Contracted Toes. D. J. Glissan.—p. 479.
Origin and Treatment of Syringomyelic Cavities. L. B. Cox.—p. 481.
Detection, Significance and Serologic Treatment of Puerperal Sepsis Due to *Clostridium Welchii* (Puerperal Gas Gangrene). C. W. Adey.—p. 483.
Pyelitis in Children. E. H. M. Stephen.—p. 485.
Posterior Nasal Sinusitis. C. M. Eadie.—p. 487.
Maternal Nutrition and Neonatal Deaths: Comparison of Neonatal Mortality Rates of Queensland and South Australia. A. J. Turner.—p. 490.

South African Medical Journal, Cape Town

12: 155-198 (March 12) 1938

- Diagnosis of Diphtheria of the Tonsils. Herderschöck.—p. 163.
Twenty-Five Years' Experience as a General Practitioner. G. J. Joubert.—p. 165.
Injuries of Peripheral Nerves. O. W. J. Wynne.—p. 168.
Decreasing the Anesthetic Death Rate. C. W. H. van der Post.—p. 179.

12: 199-238 (March 26) 1938

- Current Problems. J. C. Gillespie.—p. 201.
Eddyism, Alias Christian Science. C. E. Wilkinson.—p. 203.
Indications for Operation for Gallstones. P. R. Michael.—p. 207.
Surgical Treatment of Duodenal and Gastric Ulceration. M. Greenberg.—p. 209.

*Partial Gastrectomy in Treatment of Peptic Ulcer. A. Radford.—p. 213.

Partial Gastrectomy in Peptic Ulcer.—Radford believes that operation in peptic ulcer should be considered only when (1) competent medical treatment has failed to produce healing or relapse has occurred after such treatment, (2) severe or repeated hemorrhage occurs, (3) economic circumstances are such that the patient is unable to carry out suitable dietetic care, (4) pyloric obstruction exists and (5) jejunal ulcer exists. He suggests six possible procedures: gastrojejunostomy, pyloroplasty or gastroduodenostomy, partial gastrectomy, fundusectomy, cholecystogastrostomy and jejunostomy. He thinks that partial gastrectomy is the operation of choice in peptic ulcer and that gastrojejunostomy should be reserved for patients with cicatricial pyloric stenosis or those who from age, debility or other cause are judged unsuitable for the major procedure. He has performed the operation forty-five times in peptic ulcer with two deaths—one from hyperthyroidism and one in a syphilitic patient on whom it would have been wiser to perform gastrojejunostomy, owing to his advanced age. He performs the operation recommended by Finsterer, in which the upper half of the gastric opening is closed and the anastomosis made to the lower half, the efferent loop leaving the greater curvature and the afferent loop attached to the upper

closed portion of the stomach so as to direct the current of food downward. The operation should not be performed under general anesthesia. Under local and splanchnic anesthesia there is a maximum of operative facility and a minimum of risk.

Bull. of Health Org., League of Nations, Geneva

6: 683-894 (Oct.) 1937

- Comparative Experiments in Mass Prophylaxis of Malaria by Means of Quinine and of Synthetic Drugs (Quinacrine and Praeque). L. Parrot, A. Catanei and R. Ambialet, with cooperation of J. Chavet.—p. 683.
Health Indexes in Experimental Study of Rural District of Herge. K. Stouman.—p. 766.
Prevention and Treatment of Malaria by Synthetic Drugs. G. Badier, E. Mosna and A. Canalis.—p. 822.
International Standard Progesterone. H. H. Dale.—p. 892.

G: 895-1153 (Dec.) 1937

*Treatment of Malaria: Study of Synthetic Drugs, as Compared with Quinine, in Therapeutics and Prophylaxis of Malaria. Fourth General Report of the Malaria Commission.—p. 895.

Treatment of Malaria.—The fourth general report of the Malaria Commission includes a discussion of the treatment, clinical prophylaxis, eradication and a comparison of the synthetic drugs with quinine. Three appendices are included: In appendix A, experiments in clinical prophylaxis, curative treatment and eradication conducted in the Soviet Union with synthetic products for comparison with quinine are discussed; in appendix B, papers relating to the therapeutics and collective drug prophylaxis of malaria are reviewed and in appendix C the observations by individual members of the commission are given.

Chinese Medical Journal, Peiping

53: 211-312 (March) 1938

- Eye Changes and Residual Hypertension in Toxemia of Pregnancy. C. S. Fan.—p. 211.
Solitary Cyst of Kidney. H. C. Fang.—p. 221.
Cultivation of the Gonococcus from Urinary Sediment of Patients with Acute and Chronic Gonorrhea. T. L. Ch'in.—p. 227.
Sulfanilamide: Résumé of Available Literature, with Notes on Case of Slowly Progressive Hemolytic Anemia. R. E. Stannard.—p. 233.
Guide to Identification of Anopheline Larvae of the Colony of Hong Kong, with Notes Concerning Them. R. B. Jackson.—p. 259.
Delousing in Refugee Camps. T. C. Chi and D. L. Su.—p. 271.
Subcutaneous Emphysema as a Complication of Bronchial Asthma. W. K. C. May.—p. 278.
Incidence of Syphilis and Neurosyphilis Among the Chinese. F. G. Halpern and J. C. Tseng.—p. 281.
Leprosy Problem in Matsang Hsiang, Jukao Hsien, Kiangsu. L. S. Huizenga.—p. 287.
Portable Head Traction in Treatment of Spinal Tuberculosis in Children. C. M. Meng.—p. 290.

Nagoya Journal of Medical Science

11: 147-236 (Dec.) 1937

- *New Therapy of Pernicious Anemia. S. Okada, M. Shamoto and F. Yamase.—p. 147.
New Therapy of Gastric and Duodenal Ulcers. T. Doi.—p. 153.
Experiments on Sensitization. A. Yumoto.—p. 157.

Therapy of Pernicious Anemia.—Okada and his associates, after directing attention to the importance of liver and stomach therapy in the therapy of pernicious anemia and to the fact that histamine-like substances contained in these organs exert a hemopoietic action, point out that such histamine-like substances are found not only in animal tissues but also in plants; for instance, in spinach. An extract of spinach with histamine-like action was found to stimulate the gastric secretion and the hemopoiesis. It was decided to use this extract and a spinach powder in the treatment of a severe case of pernicious anemia. At first the patient was given daily 1 Gm. of spinach powder and three injections of 0.7 cc. of the spinach extract. These doses were gradually increased to 5 Gm. of spinach powder and 4 cc. of spinach extract. Under the influence of this treatment the hemoglobin content and the erythrocyte count increased greatly, but only to a certain point. When reduced iron was added to the spinach treatment, only a temporary improvement was noted. Since a further increase in the dose of reduced iron was not tolerated, the patient was treated with gastric juice, obtained from a healthy subject according to Castle's method, and with beef. To this treatment the erythrocytes responded with a further increase. The authors reach the conclusion that the efficacy of liver and stomach therapy can be further improved by combining them with spinach therapy.

Annales de Médecine, Paris

43: 253-332 (April) 1938

*Action of Repeated Injections of Insulin on Structural and Functional Status of Langerhans' Tissues. E. Aubertin, A. Lacoste and R. Saric.—p. 253.

Circulatory Anisergies Between Peripheral Renal and Splenic Regions. M. Bariéty and D. Kohler.—p. 285.

Influence of Collateral Circulation in Hepatic Cirrhosis on Sugar, Anumonia and Amino Acid Content of Peripheral Blood After Ingestion of These Substances. R. Martens.—p. 307.

Studies on Sclerosis of Pulmonary Artery. A. Oszaeki.—p. 320.

Action of Insulin on Langerhans' Cells.—Aubertin and his associates found that repeated insulin injections produce in the pancreas of dogs an enrichment in insular tissues. This becomes manifest in an augmentation of the number and size of the islands and in the production of diffuse exocrine changes. The enrichment appears chiefly at the level of the head of the pancreas and is especially noticeable during the first months. The authors further found that repeated injections of insulin cause an increase in the pancreatic insulin content. This increase is most noticeable during the first few months of the treatment. They also investigated the mode of action of the repeated insulin injections on the anatomic and functional state of the endocrine part of the pancreas, giving especial attention to the question whether the injected insulin produces a state of rest in the insular organ which consecutively stores its own endogenous insulin. They found that this does happen. They point out that there are two tendencies in the manner in which insulin therapy is applied in diabetes: the first aims to reestablish and to maintain the general condition without concern for the values of glycosuria and glycemia and consequently does not insist on an exact parallelism between diet and insulin dosage; the second seeks to regulate the nutrition not only from the clinical but also from the chemical point of view by suppressing the glycosuria and by maintaining the glycemia near the normal level, which can be done only if the insulin dosage, in each particular case, is rigorously adjusted to the diet. The authors believe that the first method, which tends in general to transform a consumptive diabetic patient into a florid one, does not expose the patient to the complications of the latter.

Archives des Maladies de l'Appareil Digestif, Paris

28: 209-328 (March) 1938

Diets Poor in Fats and Rich in Carbohydrates in Treatment of Diabetes. M. Labbé.—p. 209.

Lambliasis in Diseases of Liver and of Biliary Passages. H. Gählinger.—p. 223.

*Studies on Metabolism of Vitamin C: Values of Basic Ascorburia in Course of Normal Metabolism. M. Vauthey.—p. 230.

"Cholecholecystitis": Duodenal Transcholechoal Alimentation. A.-J. Bengolea and S. C. Velasco.—p. 236.

Studies on Vitamin C: Ascorburia in Normal Metabolism.—Vauthey says that vitamin C metabolism has been studied chiefly during various infections and intoxications but not so much on normal persons. Consequently he observed during several consecutive months a normal subject, weighing 65 Kg. and receiving a sensible diet with the constant vitamin C content. The determinations which were carried out were the quantity of the urine eliminated during one hour, while the person was fasting and the pH of this urine and the vitamin C content in milligrams per liter. The author says that he employed the chemical technic of Tillmans (determination of reducing power). In this report he limits himself to the description of his investigations on the so-called basic ascorburia. He applies the term "basic ascorburia" to the hourly secretion while the person is fasting; that is, to the quantity of cevitamic acid excreted in the urine during one hour while the subject is fasting. The test is made on the urine that is eliminated one hour after the first matutinal micturition. The author cites the following example: If the volume of the urine eliminated during the hour is 64 cc. and the cevitamic acid content is 15 mg. per thousand cubic centimeters, the basic ascorburia is 0.96. The tests were made on five consecutive days and then the average was determined for the five day period. The five day period tests were repeated ten times during different seasons of the year. In evaluating his procedure, the author says that it eliminates three important sources of error: (1) the daily variations of the content per liter, by the introduction of the notion of fasting ascorburia and the notion of the hourly fasting excretion, (2) the daily variations of basic ascorburia

by the establishment of averages for five day periods and (3) the seasonal fluctuations of the vitamin C metabolism by the establishment of a general average from ten averages determined in different seasons. He reaches the conclusion that the basic ascorburia, determined according to the described method, may be regarded as a physiologic constant. It can be employed for the determination of the vitamin C content of the organism and for the detection of a latent hypovitaminosis.

Liège Médical

31: 435-454 (May 1) 1938

Rickets and Spasmophilia. L. Plumier.—p. 435.

*Detection and Repression of Drunkenness in Drivers of Automobiles. A. Hougardy.—p. 446.

Detection of Intoxication in Motorists.—Hougardy shows that the detection of drunkenness in motorists involves two factors: the clinical examination of the suspected person and the determination of the alcohol content of the blood and urine. The clinical examination is practiced nearly everywhere, but Sweden is the only country in which it is thoroughly standardized. The author reproduces the questionnaire that is in use in Sweden and then cites the regulations that are in force in some other countries such as Norway, Germany and Switzerland. In the second part of the paper the author takes up the determination of the alcohol content of the blood. He briefly describes the most widely used method, that of Widmark, and mentions several others. However, he shows that the alcohol contained in the blood does not represent the total alcohol content of the tissues and even less the total quantity of alcohol ingested. The retention of alcohol varies not only in different persons but also in different tissues. In discussing the relation between the alcohol content of the blood and the degree of intoxication, the author cites the figures given by several investigators and shows that there are considerable disparities. He also shows that, whereas in some countries the legal regulations on intoxication in motorists contain definite figures on the relation between alcohol content and intoxication, in the regulations of other countries nothing definite is stated about this point. On the basis of this survey, the author concludes that the action of alcohol on the organism depends on a number of factors, such as the physical status of the subject, particularly the condition of the gastrointestinal tract (absorption) and of the kidneys (elimination). Another important factor is the concentration of alcohol in the consumed drink. The presence in the drink of substances that stimulate or depress the action of the motor, psychic, vasomotor, thermoregulator and respiratory centers deserves attention, as does also the external temperature. In other words, the author thinks that about the biochemistry and physiology of intoxication the last word has not been spoken as yet and that it is premature to draw final conclusions applicable to the medico-legal sphere.

Presse Médicale, Paris

46: 609-624 (April 20) 1938

Myelogenic Leukemia Without Splenomegaly. P. Emile-Weil.—p. 609.

*Gastric Pain Studied by Viscerographic Method. C. C. Dimitriu, T. Tanasoca and A. Popovici.—p. 610.

Problem of Elimination of Bromine by the Human Organism: Importance of Chlorine Balance. Camille Chatagnon.—p. 612.

Gastric Pain.—Dimitriu and his associates studied gastric pain by means of the viscerographic method as developed by Danielopolu and applied by him to a study of gastric spasms in tabes. This technic permits of precise concomitant graphic representation of intragastric mechanical and chemical phenomena. The authors submitted forty patients with gastric ulcer to the following procedures: (1) clinical examination of pain, (2) examination of gastric chemistry, (3) roentgen examination of gastroduodenal motility, (4) concomitant examination of gastric motility and chemistry by the viscerographic method. In eighteen cases no pain could be produced during a period of remission by the following stimuli: intragastric, insufflation, intravenous injection of physostigmine, and solution of posterior pituitary, subcutaneous injections of histamine, and direct intragastric introduction of a solution (from 0.5 to 4 per cent) of hydrochloric acid. It was concluded that pain at the level of the gastroduodenal mucosa cannot be manifested unless a fully active inflammatory lesion, the predisposing factor of the pain, is present. Similar studies were made of twenty-two patients

during the period when pain was most intense for the purpose of determining the interrelation of gastric pain, gastric motility and gastric secretion. In every case pain was experienced during gastric contractions and was absent during atonic phases. In some cases pain became exaggerated as the amplitude of the contractions increased. Pain could be produced or increased if contractility was stimulated by intravenous injections of physostigmine or solution of posterior pituitary. If the acidity of the gastric secretion was already sufficiently high, further increase by intragastric administration of from 0.5 to 3 per cent solution of hydrochloric acid would induce pain, more intense in the presence of peristaltic movements. Conversely, diminution of pain, without complete inhibition of gastric contraction, followed lessened acidity of the gastric juice, effected by intragastric administration of calcium carbonate or by injection of atropine. If contraction was completely inhibited, pain ceased. The more intense the pain, the more active the inflammation and the greater the respective intensity of contractility or of acidity.

Schweizerische medizinische Wochenschrift, Basel

68: 417-440 (April 23) 1938

- *Boeck's Disease of Lungs in Siblings. M. Dressler.—p. 417.
Frequency, Form and Position of Retinal Tears in Cases of Retinal Detachment in Ophthalmologic Clinic of Zurich During Years 1928-1936. G. Meyer.—p. 422.
*Role of Thyroid and Parathyroid in Development of Arteriosclerosis. H. Handovsky.—p. 425.

Boeck's Disease of Lungs in Siblings.—Dressler says that, since it is now almost definitely established that the disorder generally referred to as Boeck's sarcoid attacks not only the skin but other organs as well, it is better to use the term Boeck's disease, because the term Boeck's sarcoid is regarded by many as referring to isolated cutaneous lesions. He further emphasizes the fact that cutaneous lesions are not essential in Boeck's disease. After a brief reference to the involvement of the eyes and of the mucous membranes of the upper respiratory passages, he points out that changes of the bones are also likely. The hands and feet should be subjected to roentgenoscopy in all cases of Boeck's disease. The osseous manifestations of Boeck's disease are those commonly referred to as Jüngling's disease (osteitis tuberculosa multiplex cystica). The spleen and lymph nodes are likewise a comparatively frequent localization of Boeck's disease. A careful observation of the pulmonary changes in Boeck's disease revealed to Dressler that there are several types; namely, cases in which the hilus glands are chiefly involved and cases in which the parenchyma is affected either in the form of circumscribed foci or in the form of a dissemination into both lungs. He thinks that the hilar form deserves especial attention, because in his material it was the most frequent. He observed about twenty cases of this type, among which were many in which the massive tumor-like enlargement of the hilus glands was the only pathologic process. He gives detailed histories of two cases which concerned a man, aged 25, and his sister. The occurrence of Boeck's disease in siblings seems to be of some significance, for it suggests that familial factors have a part. The author stresses the negligible auscultatory aspects and the comparatively favorable general condition, in comparison with the roentgenologic aspects. Both of the siblings are able to work in spite of the extensive pulmonary changes. Of especial significance for the recognition of Boeck's disease is the behavior toward tuberculin, which the author found to be negative in nearly all cases. Not only Pirquet's but also Mantoux's reaction was negative. The author regards this anergy to tuberculin as a positive anergy and suggests that it indicates a tuberculous etiology. The course of the disorder is comparatively benign and the prognosis is usually favorable, unless the eyes or the central nervous system become involved. The author says that in a number of cases he obtained favorable results with large doses of arsenic.

Thyroid and Parathyroid in Arteriosclerosis.—Handovsky directs attention to the difficulty that is encountered in selecting animals for therapeutic experiments. Two points deserve special attention in producing a disease in animals: (1) The pathologic process must be as much as possible of a physiologic character and (2) the animal species must react neither too slightly nor too severely. The author tried to produce

arteriosclerosis by pure vitamin D. He chose dogs after it had been ascertained that their organs were free from calcifications. Three different dosages were employed. One group of dogs was given from 0.05 to 0.23 mg. per kilogram daily, a second group from 0.55 to 0.72 mg. per kilogram daily and a third group was given 3 mg. and more per dose. The treatment with the first dose was continued for 114 days and with the second dose for forty-five days. The third dosage was toxic; it rapidly produced hypercalcemia and hypercholesterolemia; moreover, within a few days grave sclerotic alterations could be produced in the renal tubules which only a few animals survived. Summarizing his observations on the different groups of animals the author says that, whereas of forty examined dogs in various stages of hypervitaminosis not a single one manifested macroscopic alterations on the aorta, the first thyro-parathyroprivic dog, which was treated for forty days with the second type of dose, showed an arteriosclerotic aorta. Moreover, this phenomenon could be reproduced a number of times; eight animals deprived of the thyroids showed these lesions of the aorta under the action of the second type of dosage. However, not only are the final morphologic lesions different: the entire process presents itself in a different manner. If, on the other hand, the thyro-parathyroprivic dogs are given injections of a thyroid preparation simultaneously with the vitamin D treatment, there are no macroscopic lesions of the aorta. Thus it is definitely proved that the arteriosclerosis in the thyro-parathyroprivic animals is attributable to the absence of the thyroid function. Moreover, the proof is furnished that the thyroid occupies a key position in relation to the alterations of the blood vessels: its hyperfunction (normal hypervitaminized animals) favors necrosis of the arterioles and inhibits arteriosclerosis; its hypofunction or total absence of its function inhibits necrosis of the arterioles and favors arteriosclerosis of the median arteries and of the aorta. In man likewise the thyroid plays a part. In this connection the author mentions the relation between myxedema and arteriosclerosis and says that, when the first ablations of the thyroid in human subjects were made, a number of cases of arteriosclerosis were observed among these patients. On the basis of several experiments which he made in order to determine the significance of the parathyroids in arteriosclerosis, he concludes that in case of diminution of the thyroid function the parathyroids may greatly favor the necrosis and the calcification of the aorta and of the large arteries.

Annali di Ostetricia e Ginecologia, Milan

60: 107-208 (Feb. 28) 1938

- Necrobiosis of Fibromyoma of Uterus in Course of Pregnancy. C. Cicci.—p. 107.
*Pregnancy and Parturition in Early Youth. G. Nicora.—p. 137.

Pregnancy and Parturition in Young.—Nicora studied 390 normal pregnant women ranging in age between 13 and 17 years. Menstruation appeared between the ages of 12 and 14 in the majority. In no case did it appear before the age of 9 or after 16 years. One woman in the group became pregnant before the beginning of menstruation. The author compares pregnancy and parturition in young girls with that of women of average age. Miscarriage takes place in about eleven of 100 cases. Delivery of premature living fetuses takes place in fourteen of 100 cases. Sympathetic phenomena develop in few cases. Heart disease, bronchopneumonia, gonorrhea and syphilis are rare complications of pregnancy in young girls. Albuminuria and eclampsia are frequent. As a rule eclampsia is of a serious type. Delivery is normal and of short duration. Dilatation of the uterus and elimination of the placenta and membranes are the stages of shortest duration. Surgical interventions in pregnancy, delivery or afterbirth are rarely necessary. The vertex presentation is the most frequent in deliveries at full term. The podalic presentation occurs in a few cases of early delivery. Transverse and other abnormal presentations are unusual. Pelvic abnormalities are rare. The joints of the pelvis of young girls have a great mobility and the contractions of the uterus are energetic. Abnormalities of the insertion and detachment of the placenta and inertia of the uterus are rare. Rupture of the perineum is more frequent but more benign in young than in older women. When it does happen, it is a first degree rupture. Puerperal

fever and septicemia are extremely rare. The mortality rate of young mothers is within the limit of the average mortality for more mature mothers. The weight of the infants at birth is slightly under normal. The mortality rate of the newborn of young mothers is high. This is because of the frequency of premature deliveries. In order to prevent abortion and premature deliveries of young mothers the author advises hospitalization in special welfare centers, to guard against overexercise. He thinks that the health of young girls is not impaired by motherhood and that their children are normally healthy.

Giornale di Clinica Medica, Parma

19: 357-468 (April 10) 1938. Partial Index

Action of Some Test Meals on Gastric Secretion. D. Antić and D. Brkić.—p. 358.

*Acidosis in Diseases of Kidney. B. Stanojević.—p. 369.

Phenomenon of Pallid Finger. K. Agapejeva.—p. 387.

Is There a Difference Between Endogenous and Exogenous Superinfections? V. Spuzic.—p. 400.

Varices of Esophagus and Stomach: Clinical and Roentgen Study. D. Boric and S. Jankovic.—p. 413.

Acidosis in Diseases of Kidneys.—Stanojević investigated the function of the kidneys in eliminating acids or bases. In the early morning the patients were given thirty drops of diluted hydrochloric acid within three or four hours, or 5 Gm. of sodium bicarbonate within two to five hours, or both. The test was carried on in normal persons and in patients who were suffering from diseases of the kidney, with or without renal insufficiency. In all cases the tests of dilution and concentration of the urine were also performed. The amount of urea and uric acid in the blood and the xanthoproteic reaction in the blood were determined. In the group of normal persons the average pH of the urine was 6.1. There was a rapid alkalization of the urine after administration of sodium bicarbonate (a pH of the urine of 8 or 8.2) followed by a rapid elimination of alkali and a similar behavior after acid. In essential hypertonia and in chronic or subchronic glomerulitis the pH of the urine before administration of sodium bicarbonate varied between 4.5 and 5.5. The elimination of alkali in the course of the test was insufficient and retarded. The pH of the urine after administration of sodium bicarbonate was below 8 in essential hypertonia and below 7 in glomerulonephritis. The author found that the pH of the urine in renal insufficiency does not change by administration of acids. An insufficient elimination of alkali during the sodium bicarbonate test parallels an insufficient concentration of the kidney. There is a relation between the increase of uric acid in the blood and the lowering of elimination of alkali of the kidney. In the course of benign focal or diffuse glomerulonephritis the power of the kidney in eliminating alkali is almost normal. As a rule a poor elimination of alkali and a low hydrogen ion concentration of the urine correspond to an insufficient power of concentration of the kidney. There is a relation between the increase or diminution of the amount of uric acid in the blood during variations of renal insufficiency and the variations of the power of the kidney to eliminate alkali in the course of repeated sodium bicarbonate tests. The alkali test is of value in showing the function of the kidney and the condition of the acid base equilibrium. The test is more reliable than tests of the power of the kidney for dilution and concentration. It is simple and well tolerated by the patients. The author concludes that there is acidosis in renal insufficiency. The kidneys have an important part in maintaining the acid-base equilibrium of the blood and body fluids. When the functions of the kidney are impaired, a disturbance of the acid base equilibrium takes place.

Riforma Medica, Naples

54: 449-488 (March 26) 1938

*Etiology of Venereal Lymphogranuloma. G. B. Cottini.—p. 451.

Treatment of Orogenous Septicemia. V. Pescetti.—p. 454.

Behavior of Zambini Reaction in Surgical Interventions. V. Lorzio.—p. 465.

Venereal Lymphogranuloma.—Cottini believes that a granular virus which causes venereal lymphogranuloma has been identified in microscopic slides prepared from the pus of patients or in stained tissues of the brain of rats which were previously inoculated. The author describes serial histologic sections of brains of rats which were successfully inoculated with Blay,

Stendel, Schäfer or Ernstberger viruses of human origin. The viruses had had from fifteen to 155 transferences from animal to animal, when used in the author's experiments. Photographic illustrations of the sections are given in the article. The author concludes that the lymphogranulomatous virus can be shown in serial sections of the brain of inoculated rats, even if the virus has passed through several inoculating transferences. The virus is selectively located in the lumen of the cerebral blood vessels in the depths of the cerebral tissues (white matter and choroidal plexuses) or around the vessels. There are neither virus granulations in the periphery of the brain and the gray substance nor free granulations in the cerebral tissue. The number of virus granulations in the cerebral blood vessels or near them is small. The author was unable to use virus which had not passed through several animals. He believes that the passages of the virus through several animals may increase or diminish the selectivity of the virus for the brain. The virus stains about the same in microscopic sections of the brain as in microscopic preparations of fresh tissues of the structure.

Prensa Médica Argentina, Buenos Aires

25: 667-706 (April 6) 1938. Partial Index

Rehberg's Test for Function of Kidney. J. J. Beretervide and C. Rechinewski.—p. 673.

Electrocardiograms and Constitutional Types. V. A. Franco.—p. 681.

*Continuous Traction on Open Stumps of Limbs. A. Torres Posse and A. A. Soljancic.—p. 687.

Erythroplasia of Vulva: Case. J. L. Carrera.—p. 694.

Continuous Traction on Open Stumps.—Torres Posse and Soljancic state that the stumps which remain open after amputation will heal by the application of continuous traction to the stump. The apparatus used by the authors is simple. Two strips of adhesive tape 5 cm. wide are placed in the form of a cross on top of which is put a cross of light wood with a hole in the center and a cord by which traction is applied. The wooden cross is slightly longer than the diameter of the thigh. The four free ends of adhesive tape are applied to the thigh from 5 cm. above the border of the stump near to the base of the thigh. The adhesive part of the tape which is not fastened to the stump is covered with a piece of bandage. A space of 15 cm. is left between the stump and the cross. The adhesive tape on the thigh is held in place by a piece of adhesive tape which is placed over it but not completely around, so that pressure is avoided. A bandage is placed on top of the adhesive tape, which is allowed to adhere to the stump for two days. Traction is applied by a convenient method with a weight of 1 or 2 Kg. Excessive pressure should be avoided, as it will cause edema. If edema appears, traction is discontinued until it disappears. A moderately active mobilization is given to the stump as soon as it is placed under traction. In treating the stump, the assistant raises it, holding it by the traction cord. The treatment is applied under the stump and the latter covered by a dressing 25 cm. long and 30 cm. wide, which is held in place either by pinning to the adhesive tape or by a bandage. Continuous traction is also indicated a day after amputation in order to obtain quick healing of the stump and also when reamputation is contemplated. This prevents retraction of the tissues, diminishes tension on the borders of the operative wounds, hastens healing and prevents or controls suppuration.

Klinische Wochenschrift, Berlin

17: 433-488 (March 26) 1938. Partial Index

*Results Obtained with New Type of Insulin (Surfen Insulin) Which Has a Depot Action But Is Free from Protamine. F. Umber, F. K. Störing and W. Föllmer.—p. 443.

Heart Minute Volume During Rest. H. W. Knipping.—p. 446.

*Physiology and Pathology of Intermediary Fat Metabolism. G. Katsch.—p. 449.

*Determination of Ketone Bodies in Small Quantities of Blood. H. G. Krainick.—p. 450.

Lactofavin Prevents Hypertrophy of Suprarenals During Experimental Hyperthyroidism. E. Hoen and C. Oehme.—p. 452.

Vector Diagram of Heart as Clinical Method. F. Schellong.—p. 453.

Polarographic Investigations on Insulins. C. Tropp.—p. 465.

New Type of Insulin.—Umber and his associates say that on the basis of clinical experiences with the various types of protamine insulin and protamine zinc insulin they are able to corroborate the effective action of these preparations and their

superiority over ordinary insulin. They think, however, that the addition of protamine to the insulin may elicit hypersensitivity because protamine is a foreign protein. In this connection they point out that, according to Joslin's observations, the addition of protamine may lead to local and general irritations. It was their aim to find an insulin with a good depot action that would be free from protein or its decomposition products. They experimented with various depot insulins that were free from an admixture of protamine. Finally a preparation was found that was tolerated without irritation and the protracted action of which was at least equivalent to protamine insulin. In this preparation the protracted action is obtained by the addition of a synthetic cyclic compound, a quinoline preparation. Trials with this insulin on seventy-five patients with diabetes mellitus revealed that it had a good depot action and was well tolerated. Its protracted action corresponds to that of protamine zinc insulin. Since the protracted action of the new insulin can be regulated, further improvements may be expected.

Intermediary Fat Metabolism.—Katsch directs attention to the fact that diabetes mellitus is not a clinical entity and that quantitative estimates of the sugar metabolism, although valuable, are not sufficient for the differentiation of its various forms. He emphasizes that the disturbances in the fat metabolism of the diabetic patient are erroneously considered as mere sequels of the disorder. The internal need of sugar forces the increase in the fat metabolism. The extent and type of the disturbance in the fat metabolism do not parallel the severity of diabetes mellitus, particularly if the severity is evaluated only on the basis of the sugar metabolism. In this connection the author points out that a patient with the severest case of lipemia, among 3,000 cases of diabetes mellitus, had only comparatively mild diabetes. Dependence of the lipid metabolism on endocrine factors (thyroid and ovary) reveal constitutional peculiarities, which have an increased significance in diabetic patients. The same can be said about the lipid metabolism with regard to its relation to parenchymal impairment of the liver and kidney. The problem of the fat content of the diet of diabetic patients is much discussed today. Moreover, the predisposition to ketosis is of great importance. The first of the investigations on these problems were those described by Krainick in the following paper.

Ketone Bodies in Blood.—Krainick says that, in order to gain an insight into the finer mechanism of the intermediary fat metabolism, analytic methods are needed which are not only simple and exact but require only small quantities of capillary blood. For the detection of relations between the fat and carbohydrate metabolisms, the determination of the ketone bodies in the blood is of great importance. For the quantitative determination of acetone in small amounts of blood the author took the Fabinyi-Fronmuer principle as the basis of his technic. His test requires thick-walled centrifuge tubes and a microdistillation system with a changeable glass distributor. In order to avoid condensation, the entire system is wrapped in four layers of wool. The apparatus is adjusted with a clamp and is heated in a paraffin bath by means of a microburner. The receiving glass is cooled with ice water. The reagents required are a 10 per cent sodium wolframate, $\frac{3}{4}$ normal sulfuric acid, a 10 per cent by volume alcoholic solution of salicyl aldehyde, 11.3 normal potassium hydroxide solution, 10 per cent by volume of sulfuric acid and 1 per cent potassium bichromate. The author hemolyzes 0.2 cc. of capillary blood with 1.4 cc. of water in a small centrifuge tube. After complete hemolysis, 0.2 cc. of wolframate is added and 0.2 cc. of $\frac{3}{4}$ normal sulfuric acid. Following each addition, the mixture is shaken carefully. After ten minutes, centrifugation is done with a high number of revolutions. The supernatant fluid is transferred to a second tube and is once more centrifugated. The entirely clear fluid is poured off immediately before the determination. In order to avoid loss of acetone, the tubes must always be closed with rubber, even during centrifugation. At the beginning of the extraction the paraffin bath is heated to 100 C.; into the receiving glass is put 2 cc. of the salicyl aldehyde solution and 2 cc. of 11.3 normal potassium hydroxide solution. Then 1 cc. of the blood centrifugate and 1 cc. of bichromate solution is put through the funnel into the distillation vessel, the cock is closed

and the receiving glass with the glass distributor is attached to the apparatus. By means of a special pipet, which is placed tightly into the neck of the funnel, 1 cc. of a 10 per cent solution of sulfuric acid is blown into the distillation vessel, while the cock is opened and the apparatus is dipped to the neck of the vessel into the paraffin bath. First oxidation is done for twelve minutes at a temperature of 100 C.; then follows distillation at 142 C. When the distillate has risen to 5 cc., it is taken from the receiving glass and under constant mixing it is put into a cooled test tube. Then the fluid is warmed for twenty minutes at 50 C. Photometry is done by inserting the green filter S 53 at a layer thickness of 10 mm. against an equally warmed compensation fluid consisting of 2 cc. of salicyl aldehyde solution, 2 cc. 11.3 normal potassium hydroxide solution and 2 cc. of distilled water. The author shows also how the total acetone and the betahydroxybutyric acid can be determined separately.

Münchener medizinische Wochenschrift, Munich

85: 497-536 (April 8) 1938. Partial Index

Anesthesia in Practice. E. von Redwitz.—p. 497.

*Relations Between Fertility and Age of Woman. O. Kolb.—p. 502.

Action of Peritonitis Serum. M. Friedemann.—p. 509.

Treatment of Tonsillitis with Bismuth Preparation. R. Zeidler.—p. 512.

Provocation Test After Male Gonorrhea. D. Schüssler.—p. 513.

Fertility and Age of Women.—Kolb demonstrates that the natural fertility of women is reduced by different factors. As the most important ones he mentions the primary or secondary diseases and anomalies of the genital apparatus and intentional contraception. The causes for the latter are manifold, but the main reason seems to be the relatively unfavorable economic status of many couples in countries with a high civilization. In order to determine the fertility of women during the different years of their life, Kolb investigated the cases which passed through the obstetric and gynecologic clinics of the German university in Prague. The total number of cases was 59,117. He found that the limits of fertility are the twelfth and forty-ninth years. Up to the sixteenth year the fertility is comparatively slight. During the following years a great increase is noticeable. Fertility is greatest during the twenty-third year. After that the decrease is gradual. It is quite apparent after the thirtieth year, but it is especially noticeable after the fortieth year. The decrease after the thirtieth year is largely ascribable to intentional restriction of the number of children. The decrease after the fortieth year is chiefly due to a gradual decrease in the natural fertility, to the lessening of the libido and the resulting reduction in cohabitation and to various disorders, not only those of the genital sphere. By a comparison of equal numbers of births before and after the World War, a difference was noted in the fertility of the various age groups; that is, there was a relative shifting of the fertility from the younger to the older age groups. Moreover, there was a greater limitation of the natural fertility in the different age groups during the after-war period.

Zeitschrift für Kinderheilkunde, Berlin

59: 431-542 (Feb. 8) 1938. Partial Index

Familiarity in Course of Diphtheria. B. de Rudder.—p. 431.

Diphtherial Sepsis. H. Kaschel.—p. 437.

*Ammonia Content of Cerebrospinal Fluid. H. H. Brühl.—p. 446.

Influence of Ultra-Acoustic Sound Waves on Enzymes of Milk. M. Kasahara and T. Yoshinara.—p. 462.

Studies on Tuberculosis: Allergometric Behavior of Children with Intrathoracic Tuberculosis in High Altitude Climate. Marian Skorczyński.—p. 465.

Influence of Youth of Mothers on Offspring. K. Schott.—p. 520.

Cutaneous Emphysema in Diphtheria. O. Saxl and K. Mendl.—p. 532.

Ammonia Content of Cerebrospinal Fluid.—Brühl studied the ammonia content of the cerebrospinal fluid in various conditions of irritation of the brain, but particularly to determine whether the brain of spasmodic nurslings is in a state of increased irritation, also outside of the convulsive attacks. In summarizing he states that the ammonia content of the cerebrospinal fluid originates in the cerebral metabolism. Normally the ammonia content of the cerebrospinal fluid is 0 microgram per hundred cubic centimeters. In conditions of excitation the brain forms more ammonia, so that it becomes demonstrable in the cerebrospinal fluid. In those involving the brain stem the ammonia values of the cerebrospinal fluid are between 0 and 90 ± 10 micrograms per hundred cubic centimeters.

timeters, but in those involving the cerebral hemisphere the ammonia values of the cerebrospinal fluid are higher and may reach 450 micrograms per hundred cubic centimeters. Thus the ammonia values permit to a certain extent a topical diagnosis of the focus of excitation. Moreover, the ammonia content of the cerebrospinal fluid is a manometer for the degree of irritation of the centers. The author demonstrates this in clinical cases. In cases of tetany of nurslings the increase in the ammonia values indicates irritation of the cerebral centers. The amount of the ammonia indicates that in these cases the centers of the brain stem, the respiratory center and the centers of the cerebral cortex are subject to periodic excitation.

Wiener Archiv für innere Medizin, Vienna

32:97-158 (March 31) 1938

- Protamine Zinc Insulin and Resistance to Insulin. W. Falta.—p. 97.
*Significance of Creatinuria in Progressive Muscular Dystrophy. P. Netolitzky and E. Pichler.—p. 121.
Case of Functional Branch Block During Pregnancy. I. Pines.—p. 129.
Action of Histamine on Galactose Elimination of Healthy Persons. F. Pollak and K. Bergmann.—p. 151.

Creatinuria in Progressive Muscular Dystrophy.—Netolitzky and Pichler demonstrate that in progressive muscular dystrophy the administration of aminoacetic acid causes an increase and later a decrease in the elimination of aminoacetic acid without necessarily effecting a clinical improvement. They show further that malaria therapy of progressive muscular dystrophy may be followed by a clinical improvement without there being essential changes in the elimination of creatine. Thus improvement in creatine tolerance is no measure for the functional improvement of the dystrophic musculature. Nothing definite is known about the mechanism of creatinuria, but recent investigations have disclosed that whenever creatinuria is produced experimentally the muscular glycogen is in a state of decomposition. On the other hand, all factors which cause a disappearance of the muscular glycogen result in creatinuria. From this the conclusion was drawn that creatinuria is a sign of the disappearance of glycogen from the skeletal musculature. Moreover, it appears that the connection between creatinuria and the disappearance of glycogen applies also to progressive muscular dystrophy and that the resynthesis of creatine and phosphoric acid to phosphagen is impaired. Thus the conditions might be similar to those which exist in case of poisoning with mono-iodoacetic acid. In this type of poisoning the blockage of the carbohydrate metabolism leaves no energy for the resynthesis of phosphagen and finally the phosphagen stores are entirely depleted. The authors decided to study the fate of the creatine thus liberated, hoping that this might permit conclusions in progressive muscular dystrophy. In experiments on rabbits they were able to show that creatine appears only as a result of the intoxication and they think that this suggests that creatine is eliminated because its resynthesis is made impossible by the metabolic disorder elicited by the poisoning. Thus the creatinuria would appear as the result of the impaired relation of free and combined creatine. Whether this mechanism has a part in the creatinuria of progressive muscular dystrophy is still problematic.

Wiener klinische Wochenschrift, Vienna

51:353-376 (March 25) 1938. Partial Index

- Hematogenic Suppurating Inflammations of Ovaries. M. Fossel.—p. 357.
Immunobiologic Problems of Scleroma with Especial Consideration of Immunotherapy. E. Neuber.—p. 358.
*Use of Mester's Test for Differential Diagnosis of Rheumatic Diseases. F. Lenocho.—p. 363.
Vitamin Therapy. R. Boller.—p. 366.

Mester's Test for Diagnosis of Rheumatic Diseases.—Lenoch performed Mester's test on 140 patients. On the flexor side of the right forearm he produced five wheals by means of the intracutaneous injection of a sterile 0.1 per cent aqueous (distilled water) solution of salicylic acid. Since for each wheal 0.2 cc. was injected, the total quantity was 1 cc. of fluid with 1 mg. of salicylic acid. The distance between the wheals was approximately 4 cm. The test was made on the fasting patient usually between 7 and 11 a. m. Patients with chronic disorders were examined while sitting down and they had to refrain from movement. Before the injections were made, blood was withdrawn from the middle finger of the right hand and

the number of leukocytes was determined. The withdrawal of the blood and the counting of the leukocytes were repeated thirty and sixty minutes after the last intracutaneous injection. The pains felt during the injections always disappeared after from one to two minutes. The wheals, which immediately after the injection had the whiteness of porcelain, gradually assumed a reddish appearance. After several hours they disappeared. In the so-called rheumatic disorders, which according to Mester include acute, subacute and chronic polyarthritis, rheumatic sciatica, spondylarthritis ankylopoietica, rheumatic heart disease, rheumatic iridocyclitis and rheumatic pains in the joints, the number of leukocytes supposedly decreases from 15 to 50 per cent, thirty or sixty minutes after the injections. The author records his experiences with the test in tables. On the basis of his observations in the 140 cases, he regards Mester's test as a valuable addition to the diagnostic methods in the so-called rheumatic diseases. As is true of the majority of the diagnostic aids, Mester's test is not infallible; but it is of assistance when it has to be decided whether an arthritis is of rheumatic or of some other origin.

Polska Gazeta Lekarska, Lwów

17:289-312 (April 10) 1938

- Endocarditis Lenta in Light of Personal Observations with Review of Literature for the Last Fifteen Years. M. Morawski.—p. 289.
Mediastinal Tumor of Unclear Origin. J. Aleksandrowicz.—p. 292.
Avitaminosis C and Endocrine Glands. B. Giedosz.—p. 293.
*Behavior of Types Gravis, Mitis and Intermedius of Diphtheria Bacilli in Region of Lwów. J. Zopoth-Jankowska.—p. 295.
Action of Prostigmine "Roche." S. Adam-Falkiewiczowa.—p. 297.
Antistreptin (Sulfanilamide) Therapy in Gonorrhea. E. Engelstein.—p. 298.

Diphtheria Bacilli in Region of Lwów.—Zopoth-Jankowska has analyzed and separated 145 different types of diphtheria bacilli in the region of Lwów. From the morphologic and biochemical point they can be divided into gravis, mitis and intermedius types and a small atypical group. The gravis type appears more frequently in diseased and convalescent patients than in healthy diphtheria carriers; the mitis type and intermedius type occur equally often in the two classes. Only one type of organism is to be found in one person whether diseased or a healthy carrier.

Klinicheskaya Meditsina, Moscow

15:1355-1504 (No. 12) 1937. Partial Index

- Hypertensive Tissue Substances. O. A. Steppan.—p. 1355.
Syphilis and Malaria. M. A. Chlenov.—p. 1365.
Physiology and Pathology of the Liver. V. M. Shaverin.—p. 1374.
Hypertonia, Neurohumoral Factors and Vegetative System. V. M. Kogan-Yasnii, B. A. Vartapetov and P. Ya. Spivak.—p. 1382.
*Blood Transfusion in Chronic Tuberculosis of Lungs, Lymph Nodes and Serous Surfaces. Ya. O. Krizhevskiy.—p. 1472.

Blood Transfusion in Tuberculosis.—Krizhevskiy states that blood transfusions did not cause a spread in the artificially produced tuberculous focus in rabbits. Blood transfusion practiced in seventy-nine patients with various forms of pulmonary, lymph node and serous membrane tuberculosis demonstrated that, regardless of the localization and gravity of the process, the beneficial effect depended on the patient's condition. Good results were obtained only in cases in which the disease process was either stationary or at least did not exhibit a tendency to progression. Blood transfusion may be practiced because of other indications or because of trauma; extensive and progressing fibrous cavernous processes constitute the only contraindication. Blood transfusion as a therapeutic measure is indicated in tuberculous involvement of serous surfaces, in extensive lymphadenitis and in focal pulmonary tuberculosis with perifocal or pneumonic manifestations. It is contraindicated in all forms of fibrous productive and cirrhotic tuberculosis. The author considers from 200 to 300 cc. of blood the proper amount for a transfusion. The favorable time for a transfusion coincides with the phase of improvement. As a rule, one transfusion administered at the favorable moment is sufficient to bring about the desired improvement for a period of time. The transfusion may be repeated when an insufficient amount of improvement has been noted. The author did not notice a parallelism between the effect of transfusion and the presence or absence of non-specific protein reactions.

Novyy Khirurgicheskiy Arkhiv, Dnepropetrovsk

40: 227-384 (No. 159) 1938. Partial Index

- Late Results of Epiphyseolysis of Distal End of Radius. A. Ravitskaya.—p. 227.
 Radical Operation for Femoral Hernia. A. D. Faddeev.—p. 240.
 Removal of Choroidal Plexus After Dandy in Treatment of Obstructive Hydrocephalus. L. S. Astvatsaturov and L. M. Glauberman.—p. 242.
 Odontogenic Neuralgias of Trigeminal Nerve. N. A. Polyskina.—p. 248.
 Filling in of Large Defect in Face with Flat (Double) Flap. A. M. Nikanorov.—p. 255.
 *Form and Function of Stomach After Resection. M. P. Fedyushin.—p. 272.

Stomach After Resection.—Fedyushin reports a clinical and roentgenologic study of fifty-two patients subjected to a partial gastric resection. Roentgenologic observations were made from one and a half to two weeks after the operation and were repeated at intervals of from two months to two years. Forty-four of the patients were operated on for a malignant tumor and eight for ulcer. With the exception of one case in which total extirpation was made and of three cases in which the continuity of the gastrointestinal tract after resection was reestablished by the first Billroth operation, the operation performed was the Finsterer modification of the Reichel-Polya method in the remaining forty-eight. The author concludes on the basis of his clinical observations that even a pronounced functional alteration as demonstrated by roentgenologic studies does not preclude a clinically satisfactory result. This fact is to be accredited not so much to the advantages of any method of resection but rather to the great adaptability of the gastrointestinal tract to the new conditions. Symptoms of a "small stomach" are due to insufficient adaptation and correction of the disturbed anatomic and physiologic relations, to errors in the method of resection and to such complications as perigastritis, gastritis and jejunitis. The form of the remaining stomach shortly after the resection depends on the operative method, the inflammatory changes and the gastric tonus. With the lapse of time the form of the gastric stump alters under the influence of the pressure of its contents. The emptying of the stomach after resection is a complicated act in which hydrostatic pressure, the systole, the reflex closure of the anastomosis and the peristaltic movements of the afferent loop of the intestine are concerned. The predominant part in the emptying act is assumed in the early postoperative period by the hydrodynamic factor, while in the late period the gastric tonus and the peristaltic activity of the afferent loop of the intestine are the determining factors. The operative method determines the early form of the gastric stump and its later adaptability to the new functional demands. The technical points in the resection which influence the proper emptying are (1) the creation of a sufficiently wide anastomotic stoma, not however to exceed that of the lumen of the afferent loop of the intestine in order to prevent retrograde spilling, (2) placing of the stoma so that it occupies the lower segment of the right border of the stump after the latter's usual shift to the left, (3) avoidance of the formation of the spur in anastomosing the ends of the gastric stump and the intestine and (4) turning in of the angle of the lesser curvature into the interior of the stomach in order to avoid retrograde evacuation.

Sovetskiy Vrachebnyy Zhurnal, Leningrad

March 15, 1938 (No. 5) Pp. 321-400. Partial Index

- Local Immunization Against Scarlatina with Aid of Virus-Toxin After Method of Belonovskiy. S. G. Ostrovskaya and I. P. Gildin.—p. 331.
 Antireticular Cytotoxic Serum in Prophylaxis of Measles. A. V. Pshenichnov.—p. 337.
 Symptoms and Treatment of Bleeding Due to Ulcer. D. G. Abramovich and K. Yu Turgel.—p. 343.
 *Symptoms and Roentgen Diagnosis of Congenital Bony Fragility. A. B. Rabinerzon.—p. 349.
 Residual Nitrogen in Blood of Patients with Acute Rheumatism. P. I. Pliner.—p. 357.

Diagnosis of Congenital Bony Fragility.—Rabinerzon reports that a girl, aged 5 years, presented blue sclerotics and a history of eleven fractures. Roentgenograms revealed a definite osteoporosis, poorly developed bony cortical layer and evidence of healed fractures. The patient's sister at the age of 10 years had had five fractures, involving the femurs and the left radius, between the ages of 2 and 5 years. Her sclerotics were likewise blue. Roentgenograms of the upper and lower extremities showed a more or less generalized osteoporosis and signs of healed fractures of the femurs and of the left radius.

The mother, aged 33, has blue sclerotics and impaired hearing. At the age of 8 years she had three fractures. Roentgenograms demonstrated an almost universal osteoporosis. The patient's maternal grandfather, now 58 years old, suffered all his life from spontaneous fractures (about twenty-six). Of his six children three survived, and of these only one presented the syndrome of bony fragility. The grandmother was well. According to the author, osteogenesis imperfecta and osteopsathyrosis idiopathica are identical, differing only in the time of their appearance, the former belonging to the fetal period, while the latter continues through life but is particularly prone to manifest itself in early childhood. The disease presents most frequently a familial and hereditary character with no emphasis on sex. Bony fragility, blue sclerotics and otosclerosis constitute the characteristic triad of symptoms. One of these, most frequently otosclerosis, may be absent. The long tubular bones and the ribs are particularly fragile. The fractures are as a rule spontaneous and painless and they heal promptly. Charcot's theory of a lesion of the central nervous system and the theory of anomaly of the development of mesenchymal derivatives are advanced in explanation of the pathogenesis of the condition. The typical roentgenologic picture is that of osteoporosis and poorly developed cortical layer of bones. The treatment consists of a general nourishing diet and climatotherapy.

Acta Chirurgica Scandinavica, Stockholm

80: 481-578 (April 21) 1938

- Operative Anastomoses of Biliary Passages: Thirty-Seven. L. Norrlin.—p. 481.
 Postoperative Phlegmonous Gastritis. M. Persson.—p. 497.
 Backward Luxation of Atlas-Epistropheus Joint with Fracture of Odontoid Process of Epistropheus. Gösta Sundelin.—p. 512.
 *Spina Bifida: Prognosis and Heredity. S. Hindse-Nielsen.—p. 525.

Spina Bifida.—Three hundred and fifty-seven cases of craniorachischisis collected from Danish hospitals are analyzed by Hindse-Nielsen with particular regard to the prognosis and hereditary genesis of the condition. He was much impressed by the enormous death rate in both the operative and non-operative cases during the first half year. Of the thirty living patients who were operated on, four presented bilocular spina bifida. Several cases were reported in which there were multiple, possibly congenital, medullary foci with medullary symptoms not corresponding to the localization of the cyst, such as ataxia of the hands in a patient operated on for a lumbosacral cyst. The author's investigation does not coincide with the supposition that boys with spina bifida attain a higher age than girls. In patients not operated on, he observed the development of secondary degeneration of the spinal cord manifesting itself during puberty and probably caused by fixation of the *ectodermis medullaris* as in spina bifida occulta. Some of the patients showed improvement of rectal incontinence at the ages of 7, 19 and 40 years. In two patients a spontaneous rupture of the cyst took place at the ages of 14 and 19 years, respectively. Three women bore five normal children. As the death rate during the first year of life is so much greater among patients who have not been operated on than those who have, and as the present investigation confirms the fact that of the patients operated on only those with meningocele have a chance of attaining good health, the author suggests (1) that as a rule only patients with true meningocele or with myelocele accompanied by minor symptoms should be operated on, (2) that patients with syringomyelocele should be left alone and (3) that children with spina bifida should be transferred to neurosurgical departments. Certain conditions indicate that the delay in the closure of the neural tube, which can be assumed to be the origin of the medullary cyst, takes place before the third fetal week. The analysis of this series does not solve the problems of the possible exogenous causes of the malformation. Through personal investigation of 124 families, the author has found additional cases of craniorachischisis besides the hospital cases making up the series. The greatest number of the deformity observed in the same family and distributed among three groups of sisters and brothers was seven. The author had confirmed the existence of fifty additional cases of spina bifida among 12,550 persons belonging to 124 families. This fact points to a considerable familial concentration and the possibility of a hereditary factor in the genesis of the condition.



Irvin Abell.

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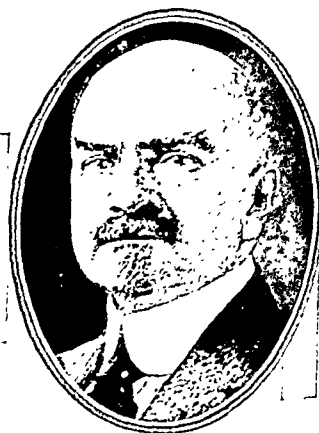
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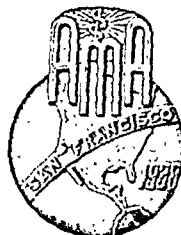
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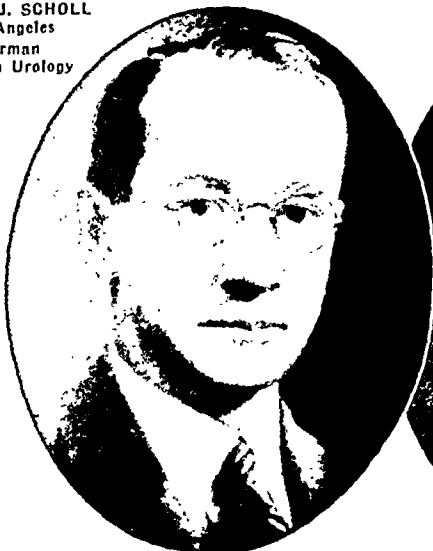
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METABOLIC STUDIES ON PATIENTS WITH GOUT

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The cause of gout is unknown, although most data concerning the pathogenesis indicate that it is a metabolic dyscrasia rather than an infectious or a deficiency disease. In affirming that gout is a metabolic dyscrasia we choose to employ a liberal interpretation of this term and imply a disturbance of function, be it chemical, physical or hormonal. Investigations of the chemical changes associated with acute and with chronic gout have been concerned principally with the variation in concentration of uric acid in the blood and in other body fluids. At present it is accepted that gouty arthritis is accompanied by an increased concentration of uric acid in the blood. Agreement is lacking, however, concerning the mechanism of this increase and the fate of this substance in body economy.

Data were presented from this laboratory in 1935¹ which indicated that gout is accompanied by changes in the body more widespread than seemingly could be accounted for by a dysfunction in the excretion or formation of uric acid. These data were derived from a study of the water and electrolyte exchange in two patients during recurrent attacks of gouty arthritis. One patient had no articular deformity at the time this study was made. The other patient had mild deformities of the joints of the hands and the feet. Since this earlier report, observations have been made on patients without demonstrable evidence of chronic gouty arthritis as well as on patients with deforming articular involvement. The distinction between acute and chronic gout is believed to be relative, and we agree with Kinglake² that: "The terms signify different degrees of the same affection. They imply no sort of distinction in the quality of the disease, but merely in its quantity or force."

SUBJECTS

In this report data from twenty-four patients (table 1) with acute or chronic gout as well as data from

control subjects will be discussed. Twenty-two of the gouty patients were males and two were females. The two women, K. He. and M. Tr., had, in addition to the usual manifestations of the disease,³ subcutaneous tophi, from which urate crystals were removed. Each male patient had had two or more attacks of acute arthritis, and on two or more occasions the concentration of uric acid in the serum was greater than 6 mg. per hundred cubic centimeters. Osseous tophi were suspected from the roentgenograms in nineteen of the males. Thirteen had soft tissue tophi containing urate crystals. All the patients seen during an acute attack responded to full doses of colchicine. The seven patients who acted as controls were suffering, respectively, from the following conditions: myxedema, diabetes insipidus, diabetes mellitus, rheumatoid arthritis, undernutrition and urate lithiasis.

METHODS

The metabolic data were collected while the patients were hospitalized in the metabolism ward of the Massachusetts General Hospital. Approximately the same number of hours of sleep were obtained at night by each patient. During the day they were ambulatory if asymptomatic, although physical activity was restricted. The daily fluid intake was selected as follows: Each patient chose an amount of fluid suitable for extra-dietary consumption. When the selection had been made, the fluid intake was constant in the periods of freedom from acute articular symptoms.

All the patients with gout were observed for a minimum of three days on a low purine diet and twelve for three or more weeks. Although medication was required for control of symptoms, all twenty-four patients were observed for at least three days on a low purine diet without medication. When no mention is made to the contrary, it may be assumed that the patient consumed a constant amount of fluid and food each day and that no medicine was administered.

The methods for analysis of the chemical constituents of the blood and urine have been described previously.¹ The procedure for determining the insensible loss of weight was similar to that described by Benedict and Root.⁴ A silk scale accurate to 10 Gm. was used for measurement of body weight. An especially constructed stretcher was used when the patients were not ambulatory. At night, before going to sleep, the patient voided and was weighed. The following morning, approximately nine hours later and before the patient voided, a second weight was obtained. All the data on insensible loss of weight were collected in the late winter and early spring. The meteorologic observations,

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From the Medical Clinic of the Massachusetts General Hospital and the Fatigue Laboratory, Harvard University.

The following persons aided in this study at various times: Drs. Walter Bauer, Bernard M. Jacobson, Robert R. Linton, Trygve Gundersen and Richard Schatzki; Mr. William V. Consolazio, Mrs. Elizabeth M. Kendall, Mrs. Phyllis Gall and the Misses Mary Byrne and Shirley Wells.

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barometric pressure, relative humidity and external temperature were obtained from the Weather Bureau, United States Department of Agriculture, Boston.

ANALYSIS OF RESULTS

The data to be presented may be divided conveniently into three parts: (1) The fate of uric acid in gouty patients with and without demonstrable evidence of damage to the kidneys, (2) cyclic changes in the metabolic processes of the body during arthritis-free periods as well as during acute attacks and (3) the treatment of acute and chronic gout.

The Fate of Uric Acid in the Body.—Although it has long been known that gout is accompanied by an increased concentration of uric acid in the blood, the mechanism of this increase has not been established. Since uric acid is an organic substance normally present in the body, it is conceivable that one of three processes or a combination of them might be responsible

matoid arthritis was 28 mg. per hundred cubic centimeters, and for the patient with urate calculi it was 48 mg. These observations correspond to those of Grafe⁶ and Loewenhardt⁷ for nongouty subjects.

Similar studies on patients with gout showed certain contrasts. It may be noted in table 2 that eight patients were able to concentrate uric acid in the urine in an amount greater than 75 mg. per hundred cubic centimeters. All but one of these was less than 50 years of age, and all except this patient excreted more than 25 per cent of phenolsulfonphthalein in the first fifteen minutes after intravenous injection of 0.6 mg.⁸ For none of the eight was the specific gravity of the urine fixed below 1.014, and none showed a diastolic blood pressure greater than 98 mm. of mercury. It is believed these patients with gout had no renal insufficiency and that their kidneys, therefore, were able to excrete water and solids and to concentrate uric acid. Two of the patients were studied for long periods, with results

TABLE 1.—Observations on Twenty-Four Patients with Gout

Patient	Nationality	Age at Onset, Years	Age in 1937, Years	First Symptoms	Tophi in Soft Tissue	Recovery of Urate Crystals	Osseous Tophi	Response to Colchicine in Acute Attack	Concentration of Serum Uric Acid			Complications
									No. of Determinations	Maximum Mg. per 100 Cc.	Minimum Mg. per 100 Cc.	
L. An.	Italian	35	55	Foot	+	+	+	Satisfactory	3	9.2	8.8	
W. G. B.	German	51	76	Foot	+	+	+	Satisfactory	4	7.1	6.7	Paget's disease
W. J. B.	German-American	41	45	Ankle	0	0	+	Unknown	2	6.6	6.2	Paget's disease
A. Ca.	American	34	71	Foot	+	+	+	Satisfactory	55	10.0	7.7	Duodenal ulcer
J. Ca.	Italian	45	47	Wrist	+	+	+	Satisfactory	7	8.5	6.2	
A. Ch.	American	22	36	Knee	0	0	0	Satisfactory	3	11.4	6.6	Migraine
T. Ch.	American	25	65	Ankle	+	+	+	Satisfactory	5	7.2	5.7	Lymphoma of eye
M. Co.	Jewish	30	48	Foot	+	+	+	Satisfactory	3	8.4	6.7	Migraine
J. Co.	Italian	40	79	Foot	0	0	+	Satisfactory	6	8.8	6.5	Duodenal ulcer
O. Cr.	Irish-American	29	41	Foot	+	0	+	Satisfactory	9	9.6	7.9	Pulmonary tuberculosis
D. Cr.	Irish-American	35	36	Foot	0	0	+	Satisfactory	2	9.3	8.5	
W. Da.	American	16	59	Foot	0	0	+	Satisfactory	5	9.6	6.2	
E. Dw.	Irish-American	41	43	Knee	0	0	+	Satisfactory	3	12.8	10.4	
P. Fa.	Italian	54	64	Foot	0	0	+	Satisfactory	2	8.8	8.4	
L. Go.	Jewish	33	39	Foot	0	0	+	Satisfactory	5	8.0	7.0	
T. Gr.	American	33	36	Foot	+	0	+	Satisfactory	3	8.9	7.0	
K. He.	Irish-American	14	47	Feet	+	+	+	Satisfactory	8	9.1	8.2	Nodular goiter
F. Mc.	Irish-American	12	25	Feet	+	+	+	Satisfactory	26	14.2	7.8	
L. Mu.	American	21	26	Foot	0	0	0	Satisfactory	6	10.0	7.5	
F. Na.	American	21	31	Ankle	+	+	+	Satisfactory	68	13.1	6.9	
W. Ri.	American	18	74	Foot	+	+	+	Satisfactory	4	10.8	8.3	
L. Sa.	Italian	41	58	Foot	+	+	+	Satisfactory	2	9.6	8.2	
M. Tr.	Irish-American	27	58	Foot	+	+	+	Satisfactory	6	10.2	7.1	Migraine
V. Tr.	Italian	52	54	Feet	0	0	+	Satisfactory	6	7.2	6.4	

for this increase. These are (a) diminished excretion, (b) diminished destruction and (c) increased formation.

In the gouty patient past the age of 50 with clinical evidence of renal insufficiency,⁵ the increased concentration of uric acid, it is believed, may be a function of poor elimination. However, prolonged observation of patients without demonstrable renal disease who are on a low purine regimen does not justify the general application of this assumption.

Before we present data concerning the gouty patients, observations on two controls will be discussed. The first subject had rheumatoid arthritis with moderate involvement of the joints as judged from the physical examination and roentgen studies. The second had renal lithiasis, and, although he had passed several urate calculi, it was not believed that he was suffering from gout. Both were observed on a low purine diet for nine days. Both had normally functioning kidneys, judging from the medical history and the clinical tests for renal function. The concentration of nonprotein nitrogen and of uric acid in the serum were normal in each patient at two determinations. The maximum daily concentration of uric acid in the urine for the patient with rheu-

matoid arthritis was 28 mg. per hundred cubic centimeters, and for the patient with urate calculi it was 48 mg. These observations correspond to those of Grafe⁶ and Loewenhardt⁷ for nongouty subjects. Similar studies on patients with gout showed certain contrasts. It may be noted in table 2 that eight patients were able to concentrate uric acid in the urine in an amount greater than 75 mg. per hundred cubic centimeters. All but one of these was less than 50 years of age, and all except this patient excreted more than 25 per cent of phenolsulfonphthalein in the first fifteen minutes after intravenous injection of 0.6 mg.⁸ For none of the eight was the specific gravity of the urine fixed below 1.014, and none showed a diastolic blood pressure greater than 98 mm. of mercury. It is believed these patients with gout had no renal insufficiency and that their kidneys, therefore, were able to excrete water and solids and to concentrate uric acid. Two of the patients were studied for long periods, with results

6. Grafe, E.: Die Krankheiten des Stoffwechsels und ihre Behandlung. Berlin, Julius Springer, 1931.

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fixed at 1.012 or less, and in a similar number the diastolic blood pressure was greater than 98 mm. The excretion of uric acid associated with a low purine diet was not determined for four patients, and in table 2 only studies of renal function are given for these patients.

No evidence was obtained in these studies which pertained to the hypothesis of Brugsch⁹ that gouty patients show a diminished destruction of uric acid in the body. In refutation of this assumption, however, the data of Folin¹⁰ should be mentioned. In three patients with gout he noted that the injection of uric acid was followed by as rapid a disappearance of the substance as in normal controls. Uricolytic enzymes are not distributed generally throughout the body,¹¹ and we believe that the fate of most of the uric acid in the blood and other body fluids is either excretion or deposition.

The third hypothesis for the elevation of the uric acid content in the blood of gouty patients, i. e., increased formation, seems to us to be the most acceptable. The concentration of uric acid in the serum was 10 mg. per hundred cubic centimeters or greater in eight of the twenty-four patients. Five of the eight were less than 40 years of age, had normally functioning kidneys and were able to concentrate uric acid in the urine in an amount greater than 50 mg. Both F. Mc. and F. Na., neither of whom showed renal insufficiency, excreted more than 2 Gm. of uric acid daily while on a low-purine diet in attack-free periods. On a similar diet two control patients without gout excreted less than 1 Gm. daily. It is thus apparent from our data that in the first years after the onset of articular symptoms gouty patients show no constitutional inferiority of the kidneys in regard to the excretion of uric acid. We believe further that any inferiority which may be demonstrated later is related to renal damage which is secondary to the prolonged and excessive excretion of uric acid.

The formation of urate calculi in gouty and non-gouty¹² patients should be mentioned in this section. Urate stones sufficiently large to produce colic were passed by four of the patients with gout; in two, renal colic preceded symptoms of arthritis. On the other hand, six patients referred to us by Dr. Fuller Albright were examined for gout because they had passed urate calculi. A history of articular disturbance was investigated, the concentration of serum uric acid was determined and roentgenograms were taken of the hands and the feet. No additional evidence was obtained in any of these cases which suggested a diagnosis of gout. We conclude, therefore, that urate calculi may accompany the prolonged and excessive excretion of urates in patients with gout but that the passage of a urate stone does not imply a presumptive diagnosis of gout.

Cyclic Changes in Metabolic Processes.—An alteration in the concentration of certain constituents of the body fluids during an acute attack of gout has been known for many years. His,¹³ Fletcher¹⁴ and others

observed a diminished urinary excretion of urate before the onset of acute symptoms, this being followed in a few days by an increased excretion. With patients on a low purine diet, this observation was not only confirmed by us but was extended to include other constituents of the body fluids and other functions of the body.

A frequent observation while patients were consuming a constant amount of food and fluid was a diuresis which immediately preceded an acute attack of gout.¹ This diuresis began from twenty-four to seventy-two hours before the onset of articular symptoms and the elevation of body temperature. It was accompanied by an increased excretion as well as an increased concentration of various urinary constituents but especially of sodium and chloride (fig. 1). The maximum output of fluid was noted immediately before or on the day of maximum articular distress and was approximately twice the daily output observed prior to the diuresis.

TABLE 2.—Cardiovascular-Renal Studies

Patient	Age	Duration of Symptoms, Yr.	Blood Pressure, Mg. Hg.	Excretion of Phenol-sulphon-phthal-in,* Percentage	Specific Gravity of Urine†	Albuminuria‡	Maximum Concentration of Uric Acid in Urine, Mg. per 100 Cc.
L. An.	55	20	120/84	21	16	0	44
W. G. B.	76	23	140/96	19	17	+	87
W. J. B.	45	4	190/104	1	10	0	46
A. Ca.	71	37	112/70	5	12	+	42
J. Ca.	47	2	120/84	55	14	0	45
A. Ch.	36	14	118/68	26	..	0	85
T. Ch.	65	40	130/84	15	16	0	49
M. Co.	48	18	120/80	36	16	0	78
J. Co.	79	39	174/78	14	14	0	38
C. Cr.	41	12	148/102	2	8	++	38
D. Cr.	36	1	136/82	27	26	0	106
W. Da.	59	43	142/88	17	18	0	34
E. Dw.	43	2	148/96	30	24	0	79
P. Fa.	64	10	190/108	30	18	0	..
L. Go.	39	6	120/80	18	20	0	42
T. Gr.	36	3	144/100	11	20	0	..
K. He.	47	33	104/76	8	13	++	11
F. Mc.	25	13	120/80	33	20	0	127
L. Mu.	27	5	138/84	33	14	+	93
F. Na.	31	10	124/90	25	20	0	112
W. Ri.	74	56	140/78	9	8	0	48
L. Sa.	50	9	130/90	20	8	0	..
M. Tr.	34	11	170/110	7	14	+++	28
V. Tr.	54	2	155/100	26	24	0	..

* Percentage of dye excreted in first fifteen minutes after injection.

† Maximum specific gravity in four hourly collections following abstinence from food and fluid for eleven hours. Only significant figures are given.

‡ A scale of + to ++++ is employed.

On the day of the maximum diuresis an increased excretion of urate was observed, which undoubtedly corresponded with the increased output noted by His and by Fletcher. The increased excretion of water and salt subsided presently and was followed by a diminished excretion. These fluctuations in excretion tended to recur in patients having frequent attacks of acute gout, and it seemed appropriate to apply the term gout cycle to describe them.

It was observed further that in the prodromal period before the onset of acute gout a gain in body weight accompanied the diuresis. It was assumed that with a constant regimen only a significant diminution in insensible loss could explain this paradoxical phenomenon.¹ Study of the precise changes in insensible loss during the prodromal period has confirmed this assumption. These changes were illustrated in two acute cycles in patient F. Mc. (fig. 2). During the three days beginning February 3, the diuresis plus the gain in body weight was about 1,600 Gm. At the same time the decrease in insensible loss of weight was more than 1,700 Gm. Again, during the two day period before February 10 the diuresis plus the gain in weight was

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12. von Müller, F.: Ueber die uratische Diathese, Wien. klin. Wchnschr., 60: 1291 (Sept. 17) 1937.

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approximately 1,900 Gm., while the diminution in insensible loss was about 1,800 Gm. That as great a cyclic change in insensible loss is not a physiologic function common to many patients may be deduced from our failure to observe similar changes in several controls. During the period of observation just mentioned, a patient with urate lithiasis without gout showed a mini-

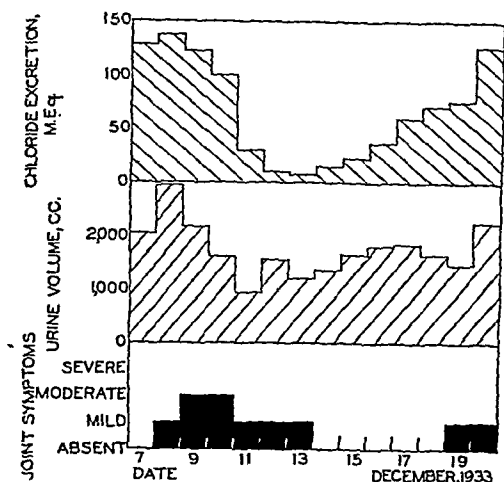


Fig. 1 (case 17).—Increased excretion of water and chloride during two acute attacks of gout in patient of 21.

mal variation in daily output of fluid and minimal changes in daily insensible loss.

In a six week period of observation on patient F. Na.,¹⁵ simultaneous determinations of insensible loss of weight were made on three control patients studied consecutively. During fourteen days of observation of a patient with diabetes insipidus, the maximum variation in insensible loss was 10 Gm. an hour. At the same time the cyclic variation in F. Na. was about 40 Gm. an hour. The control patient was then replaced for an eight day period by a patient with myxedema and later for an eleven day period by a patient with rheumatoid arthritis. The maximum daily variation in insensible loss by these two control patients was 11 Gm. an hour. The maximum variation in F. Na. during these periods was 37 and 31 Gm. an hour, respectively. In F. Mc. the diminution in insensible loss during both cycles was followed by acute arthritis; in F. Na. two of the three cycles were accompanied by acute symptoms.

The term gout cycle as originally employed included only the rhythmic changes which accompany the acute articular symptoms, as at that time no studies had been made of prolonged periods between attacks. Continued study of patients with gout has caused us to alter our former deductions. It is now believed that cyclic changes in the internal environment of the body similar to those observed during acute articular gout may occur also during symptom-free periods, and in all patients with gout whom we have studied the disease has been a continually recurring phenomenon irrespective of the presence or the severity of acute symptoms.

The cyclic variation in insensible loss, urinary volume and body weight has been studied in seven patients during twenty-four periods of from five to eight days each. In fourteen cycles acute gouty arthritis followed the decrease in insensible loss; in ten this decrease occurred without an exacerbation of articular symptoms. The majority of the symptom-free cycles, however,

were not associated with as great a variation in metabolic changes as were the cycles with acute gout. It seemed impossible, however, to predict whether or not a decrease in insensible loss during any one cycle would be followed by acute arthritis. This is illustrated in figure 3, in which two cycles are shown graphically for patient J. Co. From April 10 to 13, 1936, the diminution in insensible loss exceeded 70 Gm. an hour. After this decrease, a second maximum was reached on April 16. The first diminution in insensible loss was followed by an acute attack, while the second was not.

In the search for an explanation of this continuous cycle variation, which occurred with and without acute articular symptoms, a possible relation to meteorologic changes was considered. In this aspect of the study, barometric pressure, relative humidity and atmospheric temperature, observed at 8 o'clock each morning, were compared with daily changes in insensible loss and urinary volume. When most of these observations had been charted, a consistent correlation was noted between changes in barometric pressure, insensible loss of weight and diuresis. In the symptom-free periods a fall in barometric pressure preceded the diuresis by approximately twelve hours. In cycles with acute symptoms the maximum fall in barometric pressure preceded the diuresis and the articular symptoms by from twelve to twenty-four hours. Figure 3 shows that the diminution in barometric pressure and the insensible loss occurred at approximately the same time. There was chronologic agreement in eleven of the fourteen attack cycles and in all the symptom-free cycles. The fluctuations in external temperature and relative

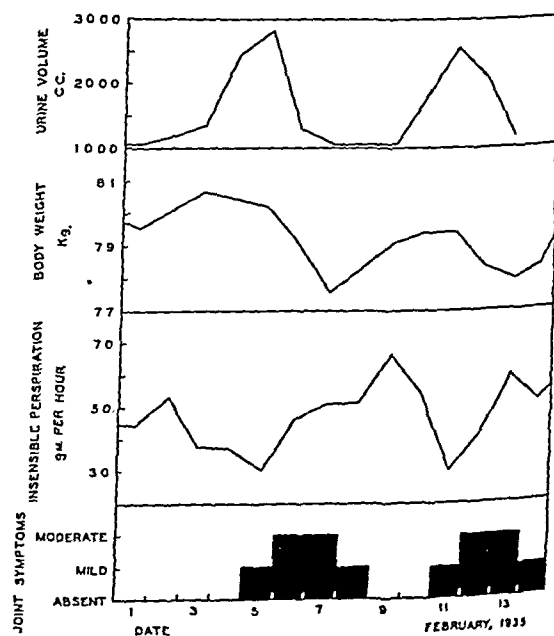


Fig. 2 (case 17).—Changes in urinary volume, body weight and insensible perspiration during two attacks of acute gout in patient of 21.

humidity were greater and more variable than those in barometric pressure, and no obvious relationship was noted between these observations and the gout cycle. It is possible that a subtle correlation between these variables exists, but it was not evident from our studies.

This quantitative study has given us new information about the patient with gout and laboratory evidence

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in support of certain clinical observations. There are patients with gout who believe that they can predict an acute attack of arthritis from an increased urinary output,¹⁶ gastrointestinal distress,¹⁷ suppression of sweating or gain in body weight. Although it is not common for the patient with gout to forecast a storm from symptomatic changes in his joints, as the patient with rheumatoid arthritis frequently does, an observation published in 1816 by Scudamore¹⁸ partially refutes this statement: "I know several gouty patients, whose sensibility to the immediate influence of the east wind . . . is almost inevitable." It is recognized that an east wind generally accompanies a falling barometric pressure, and the association of meteorologic changes and symptoms of gout may be greater than is now appreciated.

In summary, we have stressed the occurrence of cyclic changes in certain metabolic functions of patients with gout. These changes have been observed in periods with and without symptoms of acute arthritis. In several control patients without gout, the magnitude of the change of these variables was significantly less.

Treatment.—During the periods of study and the collection of the foregoing metabolic data, certain observations were made concerning treatment. It is our belief that there is no known cure for gout and that once the diagnosis is confirmed the disease will persist until the patient dies. On the other hand, much may be done to afford symptomatic relief, especially during acute attacks, when rest in bed, abundant fluids and a soft diet are indicated. Probably the most important drug to give is colchicine. In the crystalline form¹⁹ this preparation is more reliable than the wine or tincture of colchicum, the potency of which may vary. For acute symptoms colchicine may be prescribed in amounts of $\frac{1}{120}$ grain (0.0005 Gm.), to be taken every one or two hours until eight, twelve or even sixteen doses have been ingested. The symptoms of adequacy are associated with the development of nausea, vomiting or diarrhea. Many patients learn from practice the optimum number of pills to take and thereby obtain the desired alleviation of articular pain without the undesirable intestinal symptoms.

The mechanism of the action of colchicine is not known. Few pharmacologic studies have been made, and we can say little more than that it is effective clinically. It has been given by us repeatedly to patients having frequent attacks, and we have not observed any untoward symptoms or signs other than those just discussed. We have not observed a patient to be hypersensitive to this drug, nor does the drug appear to lose its efficacy with repeated ingestion.

The treatment of gout during arthritis-free periods has been and continues to be a subject for argument. Innumerable regimens and diets have been proposed, the merits of which are difficult to evaluate. There is no index of therapeutic efficiency comparable to the alleviation of pain during acute attacks, and it is our belief that the number and duration of attacks a year is the best index of the worth of any regimen. Within limits we believe that deposition of sodium urate is greater and the osseous involvement more extensive

with frequent and prolonged attacks than with infrequent attacks of short duration.

The protein content of the diet and the alcoholic content of fluids have been the battleground for most discussions of the treatment of the chronic form.²⁰ Most clinicians favor the exclusion from the diet of foods with a high purine content, a practice with which we are in agreement. We believe that the benefits of a low protein and a scrupulously low purine diet, however, have been exaggerated. Evidence supporting our belief was obtained from patients F. Na. and F. Mc. In three periods, totaling more than 7 months, F. Na. was observed in the metabolism ward on a low purine diet. During this time he had twelve attacks of acute arthritis and had severe gout on twenty-seven days. In the following eight months, at home, in

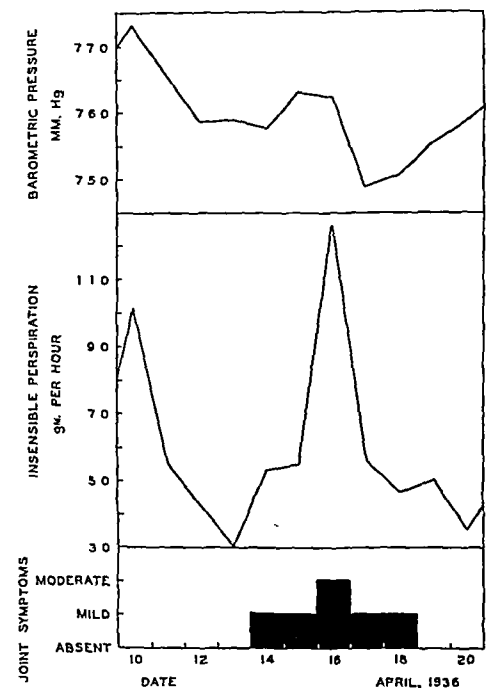


Fig. 3 (case 9).—Changes in barometric pressure and insensible perspiration during two cycles in patient of 78.

which he was on a diet of his own selection, without restriction of purine, he had seven acute attacks and had severe gout on eighteen days. Colchicine taken during the acute attacks was the only medicine taken regularly during both periods.

Similar data were obtained from F. Mc. During a nine month period in the hospital on a low purine diet he had twenty-one attacks of acute arthritis and spent thirty-nine days in bed with severe gout. In the fourteen months after discharge he had seven acute attacks and spent only seven days in bed. In this period, at home, he had red meat at least once a day and enjoyed a moderate intake of beer and occasionally hard liquor. In the hospital he was given no medicine regularly except colchicine for acute symptoms. At home he took colchicine for acute symptoms, and, in addition, from 40 to 60 grains (2.4 to 4 Gm.) of acetylsalicylic acid daily. At the end of the second period he began a third, which lasted twenty-six months. In this period he took, in addition to acetylsalicylic acid, $\frac{3}{120}$ grain (0.0015 Gm.) of colchicine daily. During this time he had seven acute attacks of gout

16. Rutledge, D. I., and Bedard, R. E.: Criteria for Diagnosis of Pseudo-gout (Pseudogout) Gout, *Proc. Staff Meet., Mayo Clin.* **12**: 149 (March 10) 1937.
17. Lichtwitz, Leopold: Gout, *Bull. New York Acad. Med.* **10**: 306 (May) 1934.
18. Scudamore, C.: *A Treatise on the Nature and Cure of Gout*, ed. 4, London, 1823.
19. In the United States colchicine may be obtained from Abbott Laboratories, Merck & Co., and Parke, Davis & Co.

20. Brogsitter, A. M.: *Diät für Gichtkranke*, ed. 3, Stuttgart, 1937.

and spent eight days in bed. Clinically there appeared to be no greater progression of the articular changes while he was receiving a liberal purine intake than when he was in the hospital on a low purine diet. It is of interest that during the four year period of observation the number of attacks a year and of days spent in bed during the low purine regimen was about tenfold that observed while the patient was eating a liberal portion of meat each day.

The experience of J. Co. may be cited, although we have no control observations for comparison. This patient is now 79 years of age and has had articular symptoms for more than forty years. During this time he has been a bartender and has consumed a liberal amount of alcoholic beverages as well as of red meat each day. For the past fifteen years he has had one or two mild attacks of acute arthritis annually. He has large aural tophi but has no crippling deformity of his extremities. If a diagnosis of gout had been made after the onset of his symptoms and he had been placed on a low purine diet, it is not unreasonable to believe that undue credit would have been given to the diet.

The efficacy of the prolonged use of acetylsalicylic acid, colchicine or cinchophen (and its derivatives) between acute attacks is uncertain. Acetylsalicylic acid is frequently desirable for mild aches and pains and may be used as in the treatment of other types of arthritis. Hench,²¹ Thannhauser,¹¹ Pratt,²² Volini,²³ Herrick²⁴ and others have stated the conviction that benefits are derived from the use of cinchophen. In our series we have used cinchophen infrequently because we believe that the danger from poisoning outweighs the benefits from its use. The administration of small amounts of colchicine each week during attack-free periods has been advocated by Cohen,²⁵ and our data are in agreement with this practice. Many of the patients in our series who have more than two attacks of gout a year are given $\frac{3}{120}$ grain (0.0015 Gm.) of colchicine each day for two or three days each week. The use of colchicine in this amount in several cases for more than two years has not produced any recognized toxic symptoms, and we believe that it is a safe practice.

A liberal fluid intake is important, as well as a reducing diet for those who are overweight.²² A diet adequate in minerals and vitamins would appear obvious, although there is no convincing evidence that massive doses of either minerals or vitamins have any particular merit.

SUMMARY AND CONCLUSIONS

Twenty-four patients with gout were studied.

The increased concentration of uric acid in the blood is believed to be a function of increased formation rather than of diminished excretion or of destruction.

The term gout cycle was used to describe a cyclic variation in water and salt exchange observed during arthritis-free periods and during acute attacks. Accompanying the increased excretion of water and salt, there was a gain in body weight and a diminution in insensible loss of weight. The changing metabolic functions appeared to be associated with changes in barometric pressure.

In the treatment of acute gouty arthritis, the use of crystalline colchicine has been very satisfactory. In asymptomatic periods, the prolonged use of a low purine and a low protein diet seems to possess no particular merit. It is our belief that a diet adequate in protein, carbohydrate, fat, vitamins, minerals and fluids should be prescribed for most patients with gout.

ROLE OF CARBON MONOXIDE IN THE CAUSATION OF MYOCARDIAL DISEASE

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In the course of study of a large group of patients whose illness could unquestionably be attributed to frequent and prolonged exposure to carbon monoxide gas, we were forcibly impressed with the frequency with which cardiac symptoms appeared. In most instances these symptoms were chiefly functional. However, in some cases the clinical manifestations were predominantly those of organic heart disease.

Carbon monoxide chemically considered is nontoxic; that is, it has no direct effect on the tissues of the body. Its injurious action is due indirectly to its extraordinary affinity for hemoglobin, because of which the oxygen of the oxyhemoglobin molecule is replaced by carbon monoxide, thus producing a state of anoxemia. In consequence of this anoxemia, functional disturbances arise. These are due primarily to mere oxygen want and secondarily to the anoxic lesions produced through oxygen deprivation.

Structures endowed with a rich blood supply, such as the myocardium and the central nervous system, normally utilize more oxygen than those less abundantly supplied; consequently, in states of anoxemia the damage to tissue in these organs is relatively more pronounced.

Carbon monoxide anoxemia does not differ essentially from anoxemia associated with severe forms of anemia. The factor responsible in both instances is the diminished oxygen-carrying capacity of the hemoglobin.

In recent years much evidence has accumulated showing a definite relationship between anoxemia and cardiovascular disease, as witnessed clinically and at autopsy, in cases of carbon monoxide poisoning and in experiments with animals exposed to carbon monoxide.

Attention has been directed to the association of angina pectoris and pernicious anemia, the former being attributed to the anoxemia produced by the latter. Keefer and Resnik¹ stated the opinion that anoxemia is a constant factor in angina pectoris and that it is possible to demonstrate anoxemia in all cases. Elliott,² who reported a case of angina pectoris with severe anemia in the presence of healthy coronary arteries and aorta, expressed the belief that the occurrence is more than a coincidence. His observations are in accord with those of Cabot,³ who reported three cases

21. Hench, P. S.: The Diagnosis of Gout and Gouty Arthritis, *Proc. Staff Meet., Mayo Clin.* 11: 476 (July 22) 1936.

22. Pratt, J. H.: Gout, in Cecil, Russell L.: A Textbook of Medicine, ed. 4, Philadelphia, W. B. Saunders Company, 1937.

23. Volini, I. F.: Gout: A Report of Ten Cases for the Year 1935, *M. Clin. North America* 21: 5 (Jan.) 1937.

24. Herrick, W. W., and Tyson, T. L.: Gout—A Forgotten Disease, *Am. J. M. Sc.* 192: 483 (Oct.) 1936.

25. Cohen, Abraham: Gout, *Am. J. M. Sc.* 192: 488 (Oct.) 1936.

Read before the Baltimore City Medical Society, Nov. 5, 1937.

1. Keefer, C. S., and Resnik, W. H.: Angina Pectoris. A Syndrome Caused by Anoxemia of the Myocardium, *Arch. Int. Med.* 41: 767 (June) 1928.

2. Elliott, A. H.: Anemia as the Cause of Angina Pectoris in the Presence of Healthy Coronary Arteries and Aorta: Report of Case, *Am. J. M. Sc.* 187: 185-190 (Feb.) 1934.

3. Cabot, R. C.: *Facts About the Heart*, ed. 1, Philadelphia, W. E. Saunders Company, 1926.

in which intense and typical angina was associated with pernicious anemia without changes in the coronary arteries. That angina pectoris may occur without associated coronary disease has also been affirmed by Allbutt,⁴ who cited fifteen cases in which the coronary vessels appeared normal at autopsy. He expressed the opinion that the anginal syndrome occurring in association with coronary or aortic disease is produced by anoxemia of the myocardium.

PATHOLOGIC PHYSIOLOGY

Campbell⁵ observed in physiologic experiments with carbon monoxide on tissue oxygen tension a striking resemblance to the effects of hemolysis, bleeding and breathing oxygen at very low pressure. The effects on animals of prolonged exposure to carbon monoxide were an increase in hemoglobin and an increase in the number of red cells per cubic millimeter of blood. These results are similar to those recorded by Nasmyth and Graham⁶ in 1906. With the gradual increase of the red cells there was a corresponding increase in the amount of carbon monoxide the animals could tolerate.

By exposing animals (rabbits, guinea pigs, rats and mice) to a relatively low percentage of carbon monoxide (0.065 per cent) and then gradually increasing the concentration, a considerable degree of tolerance, similar to that produced by low oxygen pressure in inspired air, was established. Campbell's experiments proved that the heart muscle does not tolerate a low oxygen tension and that as a result circulatory failure develops, with congestion, edema, degeneration and atrophy. The greatest changes from congestion occurred in the liver, lungs, heart muscle and brain.

The pathologic changes caused by carbon monoxide poisoning affect primarily the vascular system (Litzner⁷). There are marked dilatation of the peripheral vessels, slowing of the blood stream, increased permeability of the vessel walls with hemorrhage, perivascular infiltration and edema. Chornyak and Sayers⁸ observed in dogs asphyxiated with carbon monoxide small petechial hemorrhages, most of them not larger than would be caused by diapedesis through the dilated vessels. These small punctiform hemorrhages are characteristic lesions and may occur in any organ in the body. Larger hemorrhages also occur. Fatal cases of epistaxis and hemoptysis have been reported, and cases of bleeding from the stomach, intestine and kidneys have been observed clinically. In consequence of the vascular changes incurred through impaired nutrition, arterial spasm, thrombosis and gangrene may develop. Kroetz⁹ stated that the classic anoxic lesions in the heart of victims of carbon monoxide are hemorrhage, necrosis and processes of granulation and regeneration and that their coexistence with similar lesions in the brain adds to their significance. The lesions undergo rapid regenerative changes, and the processes of repair may be fully developed by the ninth day. He inferred that the condition may be in the nature of toxic myocarditis with symptoms of cardiac

dilatation, lowering of blood pressure and alteration in the cardiac sounds, rate and rhythm. Patients with mild involvement often recover promptly, as is indicated by the clinical course and electrocardiographic studies. Patients with severe involvement ultimately die a cardiac death.

The lesions affecting the heart have certain well defined areas of predilection. These are in the papillary muscles of the mitral valves and in the wall of the left ventricle. In nine patients examined post mortem by Gey,¹⁰ definite macroscopic hemorrhages were observed in the apex of the papillary muscles of the mitral valve, and he expressed the opinion that such hemorrhages account for the dilatation of the left ventricle usually observed at autopsy. The acute dilatation he attributed to atony of the heart muscle. When the dilatation persists over a longer period it implies damage to the heart muscle through hemorrhage and necrosis. The nutritional changes resulting from these lesions not only affect the heart muscle but may affect the bundle of His, as has been demonstrated by Lewis, White and Meakins,¹¹ who observed auriculoventricular block in cats poisoned by carbon monoxide. Greene and Gilbert¹² by oxygen deprivation produced in man diminished conductivity of the auriculoventricular nodes as well as of the bundle of His. Haggard¹³ was able to demonstrate in dogs auriculoventricular dissociation and even complete block, but the latter did not occur until increased anoxemia developed through respiratory failure. By stimulating respiration and promoting elimination of carbon monoxide by inhalation of carbon dioxide and oxygen, conduction was restored to normal.

Colvin¹⁴ observed a chauffeur poisoned by automobile exhaust gas who at the onset had pulsus alternans, with a rate of 140 a minute. Twenty-six hours later he had sinus arrhythmia and intraventricular block. Two days later the left branch of the bundle of His was involved. In five days the condition had entirely cleared. When the injury to the myocardium persists over a long time it causes a permanent disability (Holm¹⁵).

In patients with carbon monoxide anoxemia, thrombi commonly occur in the small vessels; larger vessels are not exempt, however, as many cases of coronary thrombosis have been reported. Nagel¹⁶ reported two cases of coronary disease from carbon monoxide gas and cited eight cases reported by Kroetz. Wachholz¹⁷ observed changes in the myocardium, with a fall in blood pressure, stasis, thrombus formation and occlusion of a branch of the coronary artery. The pathologic changes observed by Kaufmann¹⁸ in a man aged 35 who died from an embolism in a healthy left coronary artery were dilatation of the left ventricle and pulmonary edema. Zondek¹⁹ by means of roentgen examination, visualized cardiac dilatation in rabbits

10. Gey, R.: Zur pathologischen Anatomie der Leuchtgasvergiftung, *Virchows Arch. f. Path. Anat.* 251: 95, 1924.

11. Lewis, Thomas; White, P. D., and Meakins, John: The Susceptible Region in A-V Conduction, *Heart* 5: 289, 1913-1914.

12. Greene, C. W., and Gilbert, N. C.: Studies on the Responses of the Circulation to Low Oxygen Tension, *Arch. Int. Med.* 27: 517 (May) 1921.

13. Haggard, H. W.: Studies in Carbon Monoxide Asphyxia, *Am. J. Physiol.* 56: 390-403 (July) 1921.

14. Colvin, L. T.: Electrocardiographic Changes in a Case of Severe Carbon Monoxide Poisoning, *Am. Heart J.* 3: 484-488 (April) 1928.

15. Holm, Kurt: Acute and Chronic Carbon Monoxide Poisoning, *Med. Welt* 7: 191 (Feb. 11) 1933.

16. Nagel, H. G.: Zur Frage der Koronarschädigungen nach Leuchtgasvergiftung, *Deutsche med. Wchnschr.* 63: 301-302, 1937.

17. Wachholz, L.: Zur Kohlenoxyvergiftung, *Vrtjshchr. f. gerichtl. Med.* 31: 12, 1906.

18. Kaufmann, Edward: Pathology for Students and Practitioners, Philadelphia, P. Blakiston's Son & Co., 1929, vol. 1, p. 57.

19. Zondek, H.: Herzbefunde bei Leuchtgasvergiftung, *Deutsche med. Wchnschr.* 46: 235 (Feb. 26) 1920.

4. Allbutt, Sir Clifford: Diseases of the Arteries, Including Angina Pectoris, ed. 1, New York, Macmillan Company, 1915, vol. 2, p. 374.

5. Campbell, J. Argyll: Comparison of the Pathological Effects of Prolonged Exposure to Carbon Monoxide with Those Produced by Very Low Oxygen Pressure, *Brit. J. Exper. Path.* 10: 304-311 (Oct.) 1929.

6. Nasmyth, G. G., and Graham, D. A. L.: The Hematology of Carbon Monoxide Poisoning, *J. Physiol.* 35: 32-52, 1906-1907.

7. Litzner: Ueber Kreislauf und Herzscheidigung bei der Kohlenoxydvergiftung, *Med. Klin.* 32: 630-631 (May 8) 1936.

8. Chornyak, John, and Sayers, R. R.: Studies in Asphyxia: I. Neuropathology Resulting from Comparatively Rapid Carbon Monoxide Asphyxia, *Pub. Health Rep.* 46: 1523 (June 26) 1931.

9. Kroetz, C.: Herzschädigung nach Kohlenoxydvergiftungen, *Deutsche med. Wchnschr.* 62: 1365 (Aug. 21), 1414 (Aug. 28) 1936.

acutely poisoned by carbon monoxide. In cases of acute poisoning by coal gas the heart may rupture. Pulvertaft²⁰ reported the case of a girl of 19 who committed suicide by putting her head in a gas oven. Although the right ventricle had ruptured, microscopic sections revealed a normal heart and coronary vessels.

Investigation on the pathogenesis of angina pectoris by Christ²¹ showed that it results as a rule from acute coronary insufficiency and that, as a feature of the disease, disseminated ischemic necrosis not infrequently develops. Similar necrotic changes have been produced experimentally in animals by Büchner.²² Even mild exposure to carbon monoxide caused such lesions in rabbits. In both man and animals Dietrich and Schwiegl²³ caused acute coronary insufficiency through deprivation of oxygen.

On the basis of these observations and numerous others not mentioned, we feel convinced that carbon monoxide has an important etiologic role in the development of myocardial lesions after asphyxiation with carbon monoxide in patients with no history of preexisting heart disease.

REPORT OF CASES

Our personal observations are based on the study of a series of 136 cases of chronic carbon monoxide anoxemia extending over a period of fifteen years. The symptomatic manifestations and clinical syndromes have been described in previous publications.²⁴ The chief complaints of many of the patients were referable to the cardiovascular system. The most outstanding symptoms were palpitation, dyspnea, irregular heart action and precordial distress. The following cases, selected from this group, serve to emphasize the importance of carbon monoxide as an etiologic factor:

CASE 1.—G. D., a farmer and cattle dealer of West Virginia, aged 36, referred by Dr. Jones and Dr. Woodyard, presented a history of coronary thrombosis, heart block and symptoms of chronic encephalitis, with the parkinsonian syndrome.

The mother had died of angina pectoris and the father of paralysis agitans. The patient's past history was not significant. His health had been good until February 1935, when an attack diagnosed as influenza suddenly developed and he had a temperature from 103 to 104 F. He was admitted to the hospital, where a diagnosis of coronary thrombosis was made. After six weeks he returned home. In June, after extraction of his teeth, he had heart block, with a pulse rate of 30 a minute and typical attacks of the Adams-Stokes syndrome. He slowly recovered from these attacks but continued to be extremely nervous, emotional and obsessed with fear. On admission to the clinic Sept. 25, 1935, he was highly emotional and introspective, exhibiting intense fear when alone. He was considerably overweight and presented the typical parkinsonian syndrome, with masklike expression, flushed face, dry and desquamating skin, tense and rigid muscles and inability to feed himself, sit erect or stand and walk unaided. His speech was slow, hesitating and monotonous, and he had difficulty in finding words to express himself. The blood pressure was 132 systolic and 92 diastolic. The cardiac measurements were normal. There were an occasional extrasystole and a soft systolic murmur at the base. There were no changes in the breast sounds. The abdominal reflexes were absent, the plantar

reflexes were normal and the deep tendon reflexes were hyperactive. There were coarse tremor of the tongue and definite intention tremor of both hands. The neurologic diagnosis, which was confirmed by Dr. Gillis, was chronic encephalitis, probably the result of carbon monoxide anoxemia.

Dr. King, who saw the patient later in consultation, stated that his heart was normal on physical examination except for extrasystoles, and the only abnormality found in the electrocardiogram was extrasystoles. Laboratory studies showed an occasional trace of sugar in the urine, a normal amount of blood sugar and of blood cholesterol and a negative Wassermann reaction. When the patient was admitted, the hemoglobin content was 100 per cent, a blood count showed 5,620,000 red cells and 13,950 white cells and the differential count was normal. The basal metabolic rate was minus 8.6 per cent.

The patient lived in the midst of a newly developed oil and gas field. The home was heated by burning unrefined wet gas from the patient's own well, both day and night, in open unventilated gas heaters. During his illness gas was escaping from an imperfect heater in his bedroom. His wife noticed the odor of gas, and the doctor, recognizing it, ordered the windows open for protection. During this period the patient was stuporous, delirious, gasping for breath and nauseated; he vomited and broke out in a cold perspiration. His wife, who occupied the same room, became ill and suffered from nervousness, dizziness and headache, and his sister, who slept in an adjoining room, was similarly affected. The patient made a remarkable recovery when he was freed from exposure to gas. The cerebral as well as the cardiac symptoms completely subsided.

CASE 2.—W. A. M., a physician, aged 74, presented himself for examination in December 1935 with a diagnosis of angina pectoris and cerebral thrombosis and a history of coronary thrombosis fourteen years before.

In the winter of 1921 he suffered an attack of severe precordial pain, in which he fell and was unconscious. This pain persisted for two weeks and required the use of morphine for five days. A diagnosis of coronary thrombosis was made. The patient recovered slowly. He remained free from cardiac symptoms until October 1935, when he began to complain of paroxysmal precordial pain of two or three hours' duration, but he was able to continue his work. He also complained of dyspnea and cough. For his precordial attacks he resorted to the use of vasodilators, which afforded relief.

He gave a history of having been exposed to carbon monoxide for a period of thirty years, during which he frequently experienced the symptoms characteristic of anoxemia. He spent on an average seven hours daily in his office, which was heated by gas stoves. In cold weather the gas burned day and night.

In March 1935 an acute attack of "influenza" developed and he was confined to bed for three weeks. This was followed by symptoms suggesting a mild form of cerebral thrombosis, with slight weakness and paresthesia in the left arm and left leg and a staggering gait. These symptoms slowly subsided.

Examination Dec. 3, 1935, showed moderate arteriosclerosis, a normal-sized heart and an occasional extrasystole but no murmur; the blood pressure was 102 systolic and 62 diastolic, the pulse rate 70 and the temperature subnormal; moist rales were heard in both bases. Urinalysis, a blood count and a Wassermann test gave negative results.

It is significant that during the summer months of 1935 he had no attacks of angina pectoris, while during the following winter months he had frequent attacks. In the fall, when he began burning gas in his office, the attacks returned, averaging about one daily until November 11, when he motored to Florida. On this trip he had only one attack, which occurred several hours after he left his home in Clarksburg; but on his return two weeks later they recurred. However, since December 1936, when the fuel for heating his office was changed from gas to coal, he has been absolutely free from attacks.

COMMENT

These two patients suffered not only from the effects of carbon monoxide anoxemia on the heart but from its effect on the central nervous system. In case 1

20. Pulvertaft, R. J. V.: Rupture of the Heart in Coal Gas Poisoning, *Lancet* 2:280-290 (Aug. 6) 1932.

21. Christ, Curt: Experimentelle Kohlenoxydvergiftung Herzmuskeln nekrosen und Elektrokardiogramm, *Beitr. z. path. Anat. u. z. allg. Path.* 9:4:111-125, 1934.

22. Büchner, Franz: Die Rolle des Herzmuskels bei der Angina Pectoris, *Beitr. z. path. Anat. u. z. allg. Path.* 59:644, 1932.

23. Dietrich, S., and Schwiegl, H.: Das Schmerzproblem der Angina pectoris, *Klin. Wchnschr.* 12:135 (Jan. 28) 1933.

24. Beck, H. G.: The Clinical Manifestations of Chronic Carbon Monoxide Poisoning, *Ann. Clin. Med.* 5:1088-1096 (June) 1927; Slow Carbon Monoxide Asphyxiation: A Neglected Clinical Problem, *J. A. M. A.* 107:1025-1029 (Sept. 26) 1936; Chronic Carbon Monoxide Anoxemia: Clinical Syndromes, *South M. J.* 30:824-829 (Aug.) 1937.

there were typical symptoms of encephalitis, with the parkinsonian syndrome, and in case 2, symptoms of cerebral thrombosis. Anoxic lesions are found more frequently in the brain than in the heart, but they may occur in the two organs in the same patient, as in the cases cited; Liebmann²⁵ reported the case of a woman who died of poisoning by illuminating gas in whom the autopsy revealed multiple cerebral hemorrhages and severe interstitial and parenchymatous myocarditis in the wall of the left ventricle. The cerebral symptoms when pronounced may so completely overshadow the cardiovascular symptoms as to make the diagnosis difficult.

The electrocardiographic studies in case 1 may seem to have been disappointing, as they failed to show any abnormality after the clinical manifestations of both coronary thrombosis and heart block had disappeared. Records show that, in most instances of asphyxiation with carbon monoxide followed by coronary thrombosis, the electrocardiogram becomes normal as soon as the process subsides; and Haggard succeeded in restoring cardiac conduction to normal in dogs after the development of block associated with severe anoxemia.

In case 1 the red cell count of 5,620,000 was significant. A count of 5,000,000 or over occurred in 45 per cent of our cases in which the count was tabulated. Particularly noteworthy in case 1 is the history of angina pectoris in the mother and paralysis agitans in the father, two diseases not infrequently encountered in association with chronic carbon monoxide poisoning. The father and mother lived in the same community as the patient and under similar circumstances; they burned natural gas in open unvented heaters for twenty years.

CASE 3.—B. C. K., a lawyer aged 59, a resident of Oklahoma, referred by Dr. M. L. Lewis, had suffered for two years prior to admission from frequent attacks of precordial distress, clinically diagnosed as angina pectoris.

Although for several years the patient had had only occasional attacks of angina pectoris, in the late fall of 1934 they increased in frequency, averaging one daily until Jan. 10, 1935, when he went to Dallas for consultation. From there he came to Baltimore for further study and observation. During this period he did not have a single attack nor did he have any while under our observation, a period of two weeks. On examination Feb. 6, 1935, he was unable to recollect having had a single attack during the summer months when not exposed to carbon monoxide. This fact led to the assumption that carbon monoxide was a factor in the production of his anginal attacks. Further inquiry revealed a history of exposure to carbon monoxide over a period of twenty-five years. His house was heated by natural gas in open heaters, inadequately ventilated. For the previous five years he had been exposed also in the gas and oil fields; besides, he frequently detected escaping gas in his automobile while driving with the windows closed.

In addition to anginal attacks, he complained of symptoms of anoxemia: dyspnea, palpitation, weakness in the legs, unsteady gait, cramps in the calf muscles, headache, vertigo, cardiospasm and paresthesia. He used alcohol and tobacco moderately, drank coffee to excess and overworked.

His blood pressure was 102 systolic and 80 diastolic, his pulse rate 66 and his temperature subnormal. The heart was slightly enlarged, with an occasional dropped beat and reduplication of the second sound. No murmurs were heard. The blood vessels appeared normal for a man of his age.

Laboratory studies showed mild glycosuria, a blood sugar content of 174 mg. per hundred cubic centimeters, a basal metabolic rate of minus 21 per cent and a negative Wasser-

mann reaction. A blood count showed hemoglobin content 81 per cent, red cells 4,780,000 and white cells 8,250.

Electrocardiographic study by Dr. King revealed an abnormal tracing suggestive of myocardial degeneration, possibly of coronary origin. The diagnosis of angina pectoris was confirmed by Dr. L. F. Barker.

By improving the heating conditions and adopting a more hygienic mode of living, the patient improved and remained free from anginal attacks for some months. He later had symptoms of myocardial degeneration with congestive heart failure.

CASE 4.—F. B., a man aged 60, a toll bridge executive and a resident of Pennsylvania, referred by Dr. Richard Miller, had had symptoms of carbon monoxide anoxemia for several years, and signs and symptoms of myocardial disease had recently developed.

Since November 1932 the patient had worked about seven hours daily in an office on a toll bridge, over which an average of 18,000 automobiles passed daily. Each motorist paused to pay the toll, thus exposing the employees to an enormous amount of carbon monoxide coming from the exhaust. A blood test made while the patient was on duty showed a carbon monoxide saturation of 27 per cent. A test made of the blood of five employees showed a carbon monoxide saturation ranging from 5 to 30.75 per cent, according to the length of time exposed. At the time of his first examination the patient manifested all the symptoms of severe anoxemia but the heart showed nothing abnormal.

Laboratory studies gave normal results, except that the basal metabolic rate was minus 23 per cent and the blood cholesterol content 92 mg. per hundred cubic centimeters.

Continuing to work in this environment, he later had symptoms of congestive heart failure, with dyspnea, palpitation, attacks of acute precordial pain of anginal character and extrasystoles. An electrocardiogram made June 25, 1937, showed auricular fibrillation. One made two months previously was perfectly normal. Periodic vacations of several weeks at the seashore always relieved his symptoms. On a recent examination the heart again appeared normal.

CASE 5.—S. C., a man aged 55, owner of a gas well, complained of acute precordial pain, with dyspnea and irregular heart action on exertion.

Seven years previously he had become conscious of a rapid and labored heart action on exertion, with a rate occasionally as high as 120 a minute. Two years previously his heart had begun to miss beats and at the same time he began to have anginal attacks, but only on exertion, as on going up hill.

The blood pressure was 122 systolic and 70 diastolic and the pulse rate 78 a minute. The peripheral vessels were slightly tortuous but not beaded. The heart was not enlarged and the sounds appeared normal.

The patient heated his house with nine open gas heaters, in which he burned the wet, unrefined gas. Tests made for carbon monoxide in the living and the dining room showed that the air contained enough gas to cause symptoms. After he was freed from exposure to carbon monoxide by the installation of a central heating plant he was relieved of his symptoms, including the anginal attacks.

Numerous other cases showing the relation of carbon monoxide to myocardial disease could be cited from our records.

In the majority of fatal cases the patient dies of acute asphyxiation, usually without regaining consciousness. In others the patient not only regains consciousness but apparently recovers from the acute symptoms and remains well for a few days, and then secondary manifestations suddenly appear. These manifestations are generally referable to lesions of the heart or of the central nervous system, to which the patient succumbs.

The chronic form of carbon monoxide anoxemia is represented by patients who survive the delayed effect, or sequelae, of the acute form. The cases reported

25. Liebmann, E.: Ein Fall von Herzmuskelerkrankung nach Leuchtgasvergiftung. Deutsche med. Wchnschr. 45: 1192, 1919.

were of this form, with residual cardiac symptoms. If the cause can be removed so that the patient is no longer exposed to the damaging effect of the gas, some patients will recover, symptomatically at least. This has been demonstrated by the electrocardiogram, which showed in many instances that conduction was restored to normal. The condition of other patients will progress into the chronic invalid type of myocardial degeneration, terminating in congestive heart failure and death.

Carbon monoxide as a causative agent in producing myocardial disease may help to explain the seasonal incidence of coronary thrombosis, to which Wood and Hedley²⁶ called attention. They reported ninety-five cases observed in Philadelphia during the autumn and winter and only fourteen in the spring and summer. Master, Dack and Jaffe²⁷ observed that of 612 attacks 12.2 per cent occurred in January and 10.3 per cent in December. The increased combustion of carbon monoxide-producing fuel for motor power and heating and the increased danger from automobile exhaust gas and from improper ventilation during the cold months materially increased the hazard, thus rendering more persons susceptible to cardiovascular disease, including angina pectoris, coronary thrombosis, heart block and myocardial insufficiency.

SUMMARY

1. In a group of 136 persons who had been intermittently exposed to carbon monoxide over varying periods, myocardial symptoms were frequently manifested.

2. The lesions affecting the heart, brain and other organs are primarily vascular, consisting of small hemorrhages and perivascular infiltration with focal necrosis. When the heart is affected, coronary thrombosis frequently develops, as ascertained by postmortem and electrocardiographic studies.

3. Hemorrhagic lesions affecting the heart muscle have been produced experimentally in animals subjected to varying amounts of carbon monoxide in inspired air.

4. The impression that unless the patient dies in acute asphyxiation no harm may result is erroneous.

5. Patients who apparently recover from acute asphyxiation frequently have later manifestations, which appear in from three to seven days. These are known as delayed symptoms, or sequelae, and may affect the heart, brain or other organs and terminate fatally.

6. Those who survive the delayed manifestations may completely recover or ultimately may have severe organic disease of the heart or of other organs, to which they finally succumb.

7. Lesions may occur simultaneously in the heart and the brain, as evidenced by clinical studies and post-mortem observations.

8. In order to make a positive diagnosis of chronic myocardial disease resulting from carbon monoxide, it is essential that an accurate history be obtained with respect to exposure to gas, exhibition of symptoms of anoxemia, clinical course of the disease and absence of preexisting cardiac lesions.

St. Paul and Twenty-Third streets.

ABDOMINAL MANIFESTATIONS OF THE HYPERACTIVE CAROTID SINUS REFLEX

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Abdominal manifestations of the hyperactive carotid sinus reflex appear to be uncommon. The manifestations to be described in this paper consisted of abdominal cramps and diarrhea, occurring in conjunction with other symptoms of severe autonomic disturbance and with syncope.

A brief sketch of the basic facts pertaining to the carotid sinus reflex is essential to an understanding of the subject. For detailed accounts of the problem one must consult the work of Waller,¹ Czermak,² Hering,³ Heymans,⁴ Roskam,⁵ Weiss and Baker,⁶ Braeucker,⁷ Ferris, Capps and Weiss,⁸ Smith and Moersch,⁹ and Åsk-Upmark.¹⁰ The recent paper of Weiss, Capps, Ferris and Munro¹¹ offers a concise and lucid account to which the reader is referred. Ability to recognize these cases clinically is due primarily to the work of Weiss and his associates.

The carotid sinus is the bulbous dilatation of the internal carotid artery at its origin. It is richly supplied with a plexus of nerve fibers which give rise to the carotid sinus reflex. The reflex can be sensitized by digitalis, inhibited in certain cases by atropine and sympathomimetic drugs, and abolished by extirpation of the plexus. The chief afferent pathways are through the intercarotid, glossopharyngeal, hypoglossal and vagus nerves and the cervical portion of the sympathetic chain. The stimuli traverse central synapses in the brain stem and innervate contralateral autonomic pathways, both central and peripheral, in a variable manner. It is these variants in the efferent paths that produce the different types of motor response resulting in convulsions and syncope.

These type responses have been classified by Weiss and his associates as vagal, depressor and cerebral. The vagal and depressor types are associated with decreased cerebral blood flow and cerebral anoxemia. The vagal reaction is associated with cardiac slowing or asystole and can be modified with atropine (by depression or paralysis of the vagi) and by ephedrine and epinephrine (by direct ventricular stimulation).

1. Waller, A.: Experimental Researches on the Functions of the Vagus and the Cervical Sympathetic Nerves in Man, *Proc. Roy. Soc. London* 11: 302, 1860-1862.

2. Czermak, J.: Ueber mechanische Vagus-Reizung beim Menschen, *Jenaische Ztschr. f. Med. u. Naturwissensch.* 2: 384, 1865-1866.

3. Hering, H. E.: Die Karotissinusreflexe auf Herz und Gefäße, *Dresden, Theodor Steinkopff*, 1927.

4. Heymans, Corneille: Le sinus carotidien et les autres zones vasosensibles réflexogènes, Paris, Presses universitaires de France, 1927.

5. Roskam, Jacques: Un syndrome nouveau syncope cardiaque graves et syncope répétées par hyperreflexivité sino carotidien, *Presse méd.* 38: 590 (April 30) 1930.

6. Weiss, Soma, and Baker, J. P.: The Carotid Sinus Reflex in Health and Disease: Its Role in the Causation of Fainting and Convulsions, *Medicine* 12: 297 (Sept.) 1933.

7. Braeucker, W.: Das pressorezeptorische Nervensystem und seine praktische Bedeutung in der Chirurgie, *Beitr. z. klin. Chir.* 158: 307, 1933.

8. Ferris, E. B., Jr.; Capps, R. B., and Weiss, Soma: Carotid Sinus Syncope and its Bearing on the Mechanism of the Unconscious State and Convulsions: A Study of Thirty-Two Additional Cases, *Medicine* 14: 377 (Dec.) 1935.

9. Smith, H. L., and Moersch, F. P.: (a) Syncope of Patients with Hyperensitive Carotid Reflexes: Attacks Reproduced by Cardiac Stimulation Induced by Pressure on Carotid Sinus, *Proc. Staff Meet., Mayo Clin.* 10: 401 (June 26) 1935; (b) Further Study on the Hyperactive Carotid Sinus Reflex Syndrome: Report of Thirty-One Additional Cases, *ibid.* 11: 380 (June 10) 1936.

10. Åsk-Upmark, Erik: The Carotid Sinus and the Cerebral Circulation: Anatomical, Experimental and Clinical Investigation, Including Some Observations on the Rete Mirabile Caroticum, *Acta psychiat. et neurol. supp.* 6, pp. 1-374, 1935.

11. Weiss, Soma; Capps, R. B.; Ferris, E. B., and Munro, Donald: Syncope and Convulsions Due to a Hyperactive Carotid Sinus Reflex, *Arch. Int. Med.* 58: 407 (Sept.) 1936.

26. Wood, F. C., and Hedley, O. F.: The Seasonal Incidence of Acute Coronary Occlusion in Philadelphia, *M. Clin. North America* 19: 151 (July) 1935. Campbell.

27. Master, A. M.; Dack, Simon, and Jaffe, H. L.: Factors and Events Associated with Onset of Coronary Artery Thrombosis, *J. A. M. A.* 109: 546-549 (Aug. 21) 1937.

The depressor type is associated with symptoms due to reflex vasodilatation by way of the aortic depressor nerves and is modified by ephedrine and epinephrine but not by atropine. The cerebral type is not associated with decreased cerebral blood flow and the symptoms are probably due to a reaction in the vegetative centers of the hypothalamus, either directly or through the mediation of small vessels. Frequently combined vagal-cerebral and depressor-cerebral syndromes are observed. The commoner associated symptoms in order of frequency are dizziness and weakness, hyperpnea, facial pallor, bradycardia, numbness and tingling of the extremities, convulsions, drowsiness, cataplexy, epigastric distress, nausea, lacrimation, cough, amnesia and palpitation.¹⁰

It should be stated that the carotid sinus is but one of a number of vasosensory areas. It is not unlikely that others play a role in some disorders of analogous mechanism. The recognition of disturbances of the carotid sinus depends on the clinical accessibility of this structure. Its extirpation may abolish only one segment in a complex and widespread reflex arc, but, according to available data, this seems to be sufficient to produce the desired result in cases in which its hyperactivity has been definitely established.

The test for a sensitive carotid sinus should be carried out with some care and only one side should be stimulated at a time. The level of the bifurcation of the innominate and common carotid arteries is variable, although it is often behind the angle of the mandible. The carotid sinus is best located with the patient recumbent and the neck extended. It is then advisable to place the patient in a sitting or standing position, since the reflex is more easily evoked in this way. Several observations of the pulse and blood pressure are obtained until a base line is determined. Then pressure and massage of the sinus are carried out for from five to thirty seconds. Marked fall in blood pressure, slowing of the heart rate and general symptoms are evidences of a sensitive carotid sinus. Sudden loss of consciousness without alteration in the heart rate or arterial tension may also be indicative of hyperactivity of the carotid sinus reflex. It is extremely important to determine which of the two sinuses is the more sensitive, particularly in cases in which surgical intervention is contemplated. To exclude psychogenic factors the carotid sinus region is anesthetized with 1 per cent procaine hydrochloride; this procedure fails to abolish only those reactions which are psychogenic in origin. Stimulation of the carotid sinus has no effect in cases of narcolepsy, catalepsy, petit mal and grand mal.

After the diagnosis and classification have been established, medical therapy may be undertaken. For the vagal type of reflex atropine, ephedrine, epinephrine and benzedrine¹² are used. For the depressor type only the sympathomimetic drugs are useful. For the cerebral type, general measures—correction of systemic defects, avoidance of tight collars, fatigue and emotional upsets—are attempted. If medical therapy fails, surgical denervation of the sensitive sinus should be carried out unless some contraindication, such as local aneurysmal dilatation or sclerotic thinning, is present. The local presence of a mass, such as a tumor of the carotid body or a group of calcified nodes, of course constitutes a surgical indication. The operation consists in exposure of the carotid artery in the neck, careful stripping of the outer coat of the main arterial trunks for 2.5 cm.

below and above the bifurcation and removal of the tissue—including the carotid body—between the internal and external carotid arteries.

REPORT OF CASE

A man, aged 41, presented himself for examination Sept. 23, 1936. There was no familial history of any paroxysmal nervous disorder. At the age of 17 the patient was treated for pulmonary tuberculosis, which was subsequently stated to be healed.

The first of the attacks occurred in 1928 when he was 33. At that time, while crossing a street, he suddenly and unexpectedly experienced a sensation of tightness and fullness in the head. He became confused and noted sweating and drawing sensations in the hands. His face became flushed and he complained of throbbing in the head. He then lost consciousness, fell on the sidewalk and became incontinent of feces.

Attacks followed at the rate of from one to three a year. They were preceded by a brief aura of about five minutes' duration. The patient had never sustained any injury during an attack, and there were no known convulsions. It was not possible to determine with any accuracy the duration of the periods of unconsciousness. After a severe attack he would feel weak for two or three days.

Two physicians who had been summoned to give emergency treatment reported that during the attacks the pulse was very slow and irregular.

Rather intensive questioning failed to disclose any important psychogenic background. There was no history of constriction of the neck, as with a tight collar or pressure of the hand, preceding any of the attacks.

Sept. 20, 1936, at 7:30 p. m., the patient had another attack, which will be described in detail. Without antecedent nervousness, insomnia, constipation or ingestion of alcohol he experienced cramps in the lower part of the abdomen followed by an apparently normal bowel evacuation. On leaving the bathroom he noted a sensation of "blood rushing to the head" and his head seemed to "swell up like a balloon." While he was walking to his bedroom his fingers and toes began to tingle and sweat. He felt "uncertain and dizzy." His face was red but not blue; there was no foaming at the mouth. On reaching the bedroom he again experienced cramps in the lower part of the abdomen and attempted to return to the bathroom, where he fell unconscious into the tub, had a loose bowel movement and urinated. He was unconscious for from half an hour to an hour. There was no injury or biting of the tongue. A physician was summoned, who administered two hypodermic injections. At about 9 o'clock the patient regained consciousness, felt weak and stumbled into bed.

Physical examination September 23 was essentially negative. Neurologic and retinal examinations were likewise negative. The blood pressure was 120 systolic, 80 diastolic. X-ray examination of the skull showed no abnormality in the vault or sella. Radiographic examination of the chest showed small calcified and fibrotic deposits in both apical regions of the lungs, more marked on the left; there were old adhesions elevating the midportion of the left diaphragm. The basal metabolic rate was plus 9 per cent. The urine showed no abnormality. The blood count showed hemoglobin 106 per cent, red blood cells 6,380,000 per cubic millimeter and white blood cells 9,900, of which the polymorphonuclear neutrophils constituted 55 per cent, lymphocytes 39 per cent, eosinophils 5 per cent, basophils 1 per cent. The urea nitrogen content of the blood was 22.4 mg. per hundred cubic centimeters, sugar 100. The blood Wassermann and Kline reactions were negative. A routine electrocardiogram showed left axis deviation. With the patient holding a deep inspiration, the axis deviation was abolished, the R wave in lead 3 becoming large and the S wave small; a striking fall in pulse rate was noted.

The patient was seen by Dr. Israel Strauss, who expressed the opinion that idiopathic epilepsy and brain tumor could be excluded. During a subsequent joint observation, studies of the carotid sinus reflexes were made. Pressure on the right sinus produced a fall in blood pressure from 110-120 systolic and 70-80 diastolic to 80-90 systolic and 60 diastolic. The pulse rate fell from 84 to 60 beats per minute. In addition

12. Robinson, L. G.: Benzedrine Sulfate in the Treatment of Syncope Due to a Hyperactive Carotid Sinus Reflex, *New England J. Med.* 217: 952 (Dec. 9) 1937.

there were induced well marked symptoms such as the patient had experienced during the early stage of an attack: sensation of fulness in the head, tendency to labored breathing, numbness and sweating of the hands, tendency to unconsciousness. Even after stimulation for from twelve to fourteen seconds, however, unconsciousness and convulsions were not induced. Pressure on the left carotid sinus produced a similar fall in blood pressure and slight bradycardia but no abnormal subjective effects. The patient was instructed to take phenobarbital and atropine and to carry with him readily soluble tablets of atropine ($\frac{1}{100}$ grain, or 0.0006 Gm.) to take when a severe attack impended.

In December the patient had a severe attack, which he believed was somewhat modified by the use of atropine. From this time until the end of May 1937 he had two milder episodes without loss of consciousness.

May 26, at midnight, the patient entered his car to drive home. Nothing remarkable had occurred during the earlier part of the evening; he had taken one glass of beer. After driving for a few minutes through a congested district he "felt an attack coming on." The preliminary symptoms were those already noted in the description of the attack of September 1936. He took one tablet of atropine and stopped his car. He then attempted to leave his car to defecate. At this point he lost consciousness. At 3:30 a. m. he was seen by an ambulance surgeon and at 4 o'clock I saw him. He had regained consciousness but complained of pain in the back of the neck, of intense fatigue and of headache. He again stated that his head felt "like a balloon."

On examination the face was flushed. The patient was fully conscious but slightly drowsy. There was no pain on movement of the neck, and no meningeal signs. The lower part of the back and the buttocks were soiled with feces. The blood pressure was 130 systolic, 90 diastolic. The pulse rate was 84 beats per minute, pounding in quality. The pupils were equal in size and were not dilated; the left pupil reacted more sharply to light than the right. The mouth was dry (the patient had taken atropine). The knee and ankle reflexes on the left were somewhat more brisk than on the right. There was a neutral plantar response on the right; the response on the left was normal.

Six hours later the patient appeared fully recovered. The blood pressure was 110 systolic, 80 diastolic. The pulse was from 76 to 80 beats per minute. A sense of fatigue was present which cleared up in the course of the next three days.

June 6, 1937, the patient was seen by Dr. Soma Weiss, who confirmed the observations of the carotid sinus reflexes previously recorded. Procainization of the right carotid sinus abolished its reflexes. The surgical indications were analyzed as follows: 1. Medical therapy with atropine, phenobarbital and, later, ephedrine had been essentially unsuccessful. 2. The velocity of evolution of the severe attacks precluded successful self medication with atropine. 3. There was obvious inherent danger in some of these sudden attacks, such as the one recorded in which the patient was driving an automobile.

Consequently, surgical denervation of the right carotid sinus was carried out June 17 by Dr. Donald Munro at the Boston City Hospital. No gross pathologic changes were encountered. Recovery was uneventful. No subsequent attacks have occurred. Four months and six months after operation pressure over the right carotid sinus region produced no symptoms and no fall in blood pressure or pulse rate.

COMMENT

The interesting features of this case may be outlined briefly. There was nothing in the history to point to the carotid sinus as the origin of the widespread autonomic disturbances. However, in only approximately 25 per cent of cases is an important lead obtained in the anamnesis.^{2a} The avoidance of constriction of the neck by the use of loose collars is sometimes observed. Disturbances of the bowel such as occurred in this case are due, as has already been indicated, to severe widespread autonomic discharge with the afferent limb of the reflex arc in the carotid sinus. They are

relatively unusual and may further confuse the differential diagnosis between hyperactive carotid sinus reflexes and idiopathic epilepsy. It is not unlikely, however, that with more general recognition of these disorders more cases of this type will be observed. Of interest was the prolonged duration of the attacks of syncope noted in this case, since ordinarily these are of relatively short duration, usually lasting only a few minutes.

Further intensive study of this and related conditions is of great importance, since it opens to improved clinical approach the field of frank and borderline autonomic and vegetative disorders.

941 Park Avenue.

CONCENTRATED STREPTOCOCCUS (HEMOLYTIC) ANTITOXIC SERUM IN PUERPERAL FEVER

FURTHER THERAPEUTIC STUDIES

A. F. LASH, PH.D., M.D.

CHICAGO

Many years passed between the time that Pasteur (1878)¹ first cultivated the hemolytic streptococcus from a patient with puerperal sepsis and the time that attempts were made to combat the disease with serum. Of all the bacteria that may produce puerperal sepsis, the hemolytic streptococcus has been found the most common invader in the fatal types of the infection. Since 1895, when Marmorek² produced a serum which was supposedly valuable in the treatment of all types of streptococcal infections, other investigators³ employed polyvalent serums with discouraging results. Of all the types of serum therapy for puerperal sepsis subsequently reported,⁴ the most promising employed human convalescent serum.^{4b} However, the inadequacy of the supply made this mode of therapy impracticable.

The Dicks⁵ demonstrated the importance of streptococcus antitoxin in the treatment of scarlet fever by a controlled therapeutic study. In one series of patients with moderately severe attacks (thirty-five controls and twenty-one treated), there were no deaths, but a higher incidence of complications occurred among the controls, or untreated patients. In another series of patients with severe attacks (fifteen controls and twenty-nine treated), there was a mortality of 20 per cent in the control group and of only 3.4 per cent in the treated group.

The demonstration in 1925 of the production of toxin by hemolytic streptococci from patients with puerperal sepsis⁶ and the subsequent production of an antitoxin⁷ introduced a new and rational basis for serum therapy

Eli Lilly & Co. prepared the serum and furnished the author with an adequate supply for this study.

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1. Pasteur: *Septicemia puerperale*, Bull. de l'Acad. de med., 1879, pp. 260-271.

2. Marmorek: *Ann. Inst. Pasteur*, 9: 593, 1895.

3. These include:

Van der Velde and Peham: *Arch. f. Gynäk.*, 23: 1, 1904.
Aronson, quoted by Koehler and Ehrenfest: *Therapy of Puerperal*

Fever, St. Louis, C. V. Mosby Company, 1925, pp. 224-227.
Neufeld, F., and Rimpau, W.: *Ztschr. f. Hyg. u. Infektionskrankh.*

51: 283, 1905.
Meyer, F., and Ruppel, W. G.: *Med. Klin.*, 3: 1192, 1907.
Bar and Tissier: *L'Obst.*, 1: 97, 1896.

4. (a) Krongold-Vinaver, S.: *Bull. Soc. d'obst. et de gynéc. de Paris*, 10: 36, 1921. (b) Zankemeister, W., and Meissl, T.: *Wien. klin. Wchnschr.*, 22: 10-14, 1909. (c) Bailey, Harold: *Am. J. Obst. & Gynec.*

7: 658 (June) 1924.
5. Dick, G. F., and Dick, Gladys Henry: *Therapeutic Results with Concentrated Scarlet Fever Antitoxin*, J. A. M. A. 84: 803 (March 14) 1925.

6. Lash, A. F., and Kaplan, Bertha: *Puerperal Fever*, J. A. M. A. 84: 1991 (June 27) 1925.

7. Lash, A. F., and Kaplan, Bertha: *Puerperal Fever*, J. A. M. A. 86: 1197 (April 17) 1926.

for puerperal sepsis. Subsequent clinical studies of the effect of the antitoxic serum on puerperal sepsis indicated its therapeutic value in the early stages.⁸ The contemporary studies of Warnekros, Louros and Becker⁹ and Gaessler¹⁰ corroborated the definitely favorable effect of treatment with antitoxic serum. That the serum was of value only when used early in the course of the disease was in accord with the experience with serum therapy for any toxin-produced disease, such as diphtheria, infection with *Bacillus welchii*, scarlet fever and erysipelas. Although an advance was made over the old antistreptococcus nonantitoxic serum, the therapeutic evaluation of the preparation was very difficult because of known spontaneous recoveries from streptococcal infections and the absence of any published studies checked by adequate controls. The present study, begun in 1928, was undertaken to check the value of serum therapy in a series of patients with puerperal sepsis in which alternate patients were treated with serum.

TABLE 1.—Predisposing Etiologic Factors in Puerperal Sepsis

	Treated Group (40)	Control Group (33)
Race		
White.....	21	11
Negro.....	19	22
Age		
20.....	13	11
21-25.....	13	8
26-30.....	7	8
31-35.....	5	4
36-40.....	1	2
41.....	1	0
Gravida		
I.....	21	15
II.....	4	5
III.....	5	5
IV.....	1	3
V.....	3	1
VI.....	4	1
VII.....	1	0
VIII.....	0	0
IX.....	1	2
X.....	0	1
Character of Labor		
Spontaneous.....	24	20
Operative.....	16	13

TABLE 2.—Clinicopathologic Diagnosis of Puerperal Sepsis

	Treated Group (40)	Control Group (33)
With early parametritis.....	29	18
With early generalized peritonitis.....	4	7
	6	4
	1	4

TABLE 3.—Results of Antitoxic Streptococcus Serum Therapy

Mortality	Complications	
40 treated patients 4 (10 per cent)	Unilateral parametritis, 3	Pyelitis, 2
33 control patients 13 (39.4 per cent)	Parametritis: Unilateral, 7; Bilateral, 2	Pyelitis, 1

PREPARATION AND DOSAGE OF SERUM

The serum was prepared by immunization of horses with the toxin and organisms isolated from the blood and cervixes of women with severe puerperal sepsis due to the hemolytic streptococcus. The details have been

described in another study.⁸ The immune serum was utilized when a high antitoxic titer was demonstrated, as compared with scarlet fever antitoxin and after concentration. The initial dose was 40 cc. of the concentrated serum. It was given after the patient was tested and found to be free of idiosyncrasy to horse serum.

TABLE 4.—Abstracts of Deaths in Treated Series

Patient	Character of Delivery	Onset of Puerperal Sepsis	Clinicopathologic Diagnosis	Bacteriology		Serum Therapy	Comment
				Cervix	Blood		
D. T., white, aged 25, P-I, G-II	Self induced abortion with catheter	3d day post abortion entered hospital; 104.2, 118, 22; chills, lower abdominal pain for 48 hours	Acute metritis; early peritonitis	Str. hem.	Neg.	5th day post abortion 40 cc. intravenously; 6th day post abortion 20 cc. intramuscularly; 7th day post abortion 40 cc. intravenously (104, 160, 44)	Died 8th day post abortion; generalized peritonitis; no autopsy
S. J., white, aged 21, P-I, G-II	Self induced abortion with catheter	5th day post abortion; pains in lower abdomen; 6th day post abortion entered hospital; 103.4, 124, 40	Acute metritis; early peritonitis	Str. hem.	Neg.	7th day post abortion 40 cc. intravenously; 8th day post abortion 40 cc. intramuscularly; 9th day post abortion 20 cc. intramuscularly	Died 12th day post abortion; autopsy: generalized peritonitis
M. M., white, aged 22, P-V, G-V	Forceps delivery at home followed by daily douches for chills, fever	6th day P.P. entered hospital; 104.4, 182, 32; toxic; abdomen slightly distended but soft	Acute metritis; early parametritis; peritonitis	Str. hem.	Str. hem.	7th day P.P. 40 cc. intravenously; 8th day P.P.; 40 cc. intramuscularly; 9th day P.P. 20 cc. intramuscularly; 10th day P.P. 20 cc. intravenously	Died 11th day P.P.; generalized peritonitis; no autopsy
M. S., white, aged 40, P-V, G-VI	Spontaneous delivery, 6 hours, 27 min. labor	3d day P.P.; 103.4, 120, 20; pain in lower abdomen	Acute metritis	Str. hem.	Neg.	8th day P.P. 60 cc. intramuscularly	Died 9th day P.P.; generalized peritonitis; no autopsy

The intravenous route was used if the patient was very toxic, but usually the intramuscular route was chosen. The same dose was repeated in twenty-four hours if the clinical course of the patient required it. A third dose of 20 cc. was given twenty-four hours later if necessary. From clinical experiences it was observed that as a rule 100 cc. of the concentrated antitoxic serum was sufficient to obtain a favorable response.

CLINICAL MATERIAL

The patients treated were all in the sepsis ward of the Cook County Hospital, having been delivered there or elsewhere. All of them had cultures taken of material from the cervix which yielded hemolytic streptococci. Cultures of the blood were also taken. In order for a patient to receive serum therapy or to be included in our series for study, the comprehensive diagnosis had to be puerperal sepsis, acute metritis, septicemia or toxemia, hemolytic streptococcus infection. Although the plan followed was to give serum to alternate patients, in compiling my statistics I found several more in the serum group, the reason being that

8. Lash, A. F.: *Am. J. Obst. & Gynec.* 17: 297 (March) 1929.9. Warnekros, K.; Louros, N., and Becker, M.: *München. med. Wehnschr.* 73: 2155 (Dec. 17) 1926.10. Gaessler, E.: *München. med. Wehnschr.* 75: 164 (Jan. 27) 1928.

the inclination of the house physician occasionally was to use the serum in cases of severe involvement despite the rule. All the patients fulfilled the criteria of having early severe sepsis on the basis of clinical, pathologic

TABLE 5.—Abstracts in Deaths in Control Series

Patient	Character of Delivery	Onset of Puerperal Sepsis	Clinico-pathologic Diagnosis	Bacteriology		Comment
				Cer-vix	Blood	
K. D., Negress, aged 18, P-I, G-II	Spontaneous delivery at home	4th day P.P. 103; 124; 22; chills	Acute metritis	Str. hem.	Neg.	Died 22 days P.P.; septicemia; no autopsy
A. D., white, aged 28, P-IV, G-V	Spontaneous 5½ months miscarriage at home; placenta removed by doctor	2d day P.P. 104.4; 124; 24	Acute metritis; early parametritis; septicemia	Str. hem.	Str. hem.	Died 17 days P.P.; septicemia; no autopsy
A. S., white, aged 40, P-XIII, G-XIII	Attempted forceps, version and extraction at home; craniotomy and manual removal of placenta in hospital; spontaneous delivery	2d day P.P. 101.4; 132; 40	Acute metritis	Str. hem.	Neg.	Died 62 days P.P.; autopsy; subacute P.P. metritis; purulent parametritis; recent thrombo-endocarditis of mitral valve; thrombosis of left sigmoidal petrosal and cavernous sinus plus usual general pathologic changes of sepsis
M. J., Negress, aged 26, P-II, G-II	Spontaneous delivery	4th day P.P. 103; 124; 22	Acute metritis	Str. hem.	Neg.	Died 18 days P.P.; septicemia; no autopsy
B. S., Negress, aged 17, P-I, G-I	Spontaneous delivery; artificial rupture of B.O.W.	3d day P.P. 103.4; 124; 32	Acute metritis; early peritonitis; septicemia	Str. hem.	Str. hem.	Died 7 days P.P.; generalized peritonitis; septicemia
L. G., Negress, aged 30, P-I, G-II	Classic cesarean section	2d day P.P. 101.4; 120; 26	Acute metritis; early peritonitis	Str. hem.	Neg.	Died 5 days P.P.; autopsy; diffuse fibrinopurulent peritonitis metritis
G. B., white, aged 33, P-IV, G-V	Self induced abortion	3d day post abortion; 102.4; 124; 22	Acute metritis	Str. hem.	Neg.	Died 91 days post abortion; autopsy; suppurative thrombophlebitis of uterine, iliac, femoral veins and inferior vena cava, plus generalized appearances of septicopyremia
I. C., Negress, aged 31, P-IX, G-IX	Spontaneous delivery	4th day post partum; 102.2; 110; 16	Acute metritis	Str. hem.	Neg.	Died 14 days P.P.; autopsy; pseudo-membranous suppurative endometritis metritis; thrombophlebitis left ovarian vein, right ovarian vein and inferior vena cava; multiple lung abscesses
M. G., Negress, aged 20, P-IV, G-IV	Spontaneous delivery	4th day post partum; 103; 100; 88	Acute metritis; septicemia	Str. hem.	Str. hem.	Died 31 days P.P.; septicemia
A. D., Negress, aged 16, P-I, G-II	Self induced abortion with pen-holder	5th day post abortion; 102.8; 112; 24	Acute metritis; early peritonitis	Str. hem.	Neg.	Died 11 days post abortion; generalized peritonitis
T. A., Negress, aged 21, P-III, G-V	Spontaneous delivery	3d day post partum; 103.2; 102; 22	Acute metritis; early peritonitis	Str. hem.	Neg.	Died 14 days P.P.; generalized peritonitis
L. T., Negress, aged 32, P-III, G-IV	Spontaneous delivery at home	4th day post partum; 104.8; 126; 22	Acute metritis; septicemia	Str. hem.	Str. hem.	Died 6 days P.P.; autopsy; acute metritis; septicemia
L. S., white, aged 24, P-III, G-IV	Spontaneous delivery	2d day post partum; 107.2; 128; 22	Acute metritis	Str. hem. also in throat	Str. hem.	Died 7 days P.P.; septicemia

and bacteriologic changes, as discussed in a previous publication on nomenclature.¹¹ There were forty patients in the treated group and thirty-three in the control group. Although the stage of the disease was judged early, on the basis of duration of fever and symptoms, careful examination and the clinical course demonstrated variations in the rate of the progression of the infection and resulting pathologic changes. Thus acute metritis and toxemia were usually present from three to five days after the onset of the infection, but in some instances generalized peritonitis or septicemia occurred within the same time. Therefore, the evaluation of the clinical material of puerperal sepsis was difficult, but these factors were considered in the analysis of the two groups. There were seven positive blood cultures for hemolytic streptococci in the control group and six positive blood cultures in the treated group.

The clinical statistics given in table 1 indicate a similar incidence of the usual etiologic factors of puerperal sepsis, particularly the high incidence of operative deliveries. Table 2 shows the incidence of the pathologic stages in the two series of patients studied when first seen. The diagnosis of early puerperal sepsis was a chronologic one; that is, a duration of from two to five days. The varying rate of progression of the infection during this interval is evident from table 2. The two groups of patients were, however, similar, allowing for the determination of the value of serum therapy.

The results of the antitoxic streptococcus serum therapy are given in table 3. The residual pathologic changes found clinically when the patients were discharged are also given. The favorable effect of the serum therapy is apparent in a comparison not only of the mortality but also of the incidence and extent of the residual pathologic changes. When the early cases of my last report were included, the total number of patients treated was sixty, with a mortality of 8 per cent (five patients), and there were forty-four control patients, with a mortality of 48 per cent (twenty-one patients); the latter rate is comparable to the mortality reported by Fitzgibbon and Bigger¹² (51 per cent in fifty-seven patients not treated with serum).

The amount of serum used depended on the clinical response. Of the forty patients, twelve received 40 cc., nine received 60 cc., six received 80 cc., six received 100 cc., five received 120 cc. and one received 160 cc. No immediate reaction followed the use of the concentrated serum. Although the intravenous injection gave a quicker therapeutic response, the intramuscular route was most often chosen for the sake of safety. The difference in rate of absorption between the two may not be great, but the effect is much more striking with intravenous administration. Late serum sickness, that is, erythema, urticaria and swollen and tender joints, occurred from six to nine days after the administration of the serum in 40 per cent of the patients, which is a high incidence. No serious consequence followed the serum sickness, except in two patients: one had persistent sciatica and the other had toxic encephalitis (no organisms on smear or culture). They recovered, and the relation to serum therapy was dubious.

An analysis of the deaths in the treated group (table 4) shows that the cause of death was generalized peritonitis. The negative value of the serum in this group was not due to the delay in the administration of

11. Lash, A. F.: *Am. J. Obst. & Gynec.* 27: 793 (June) 1934.12. Fitzgibbon, G., and Bigger, J. W.: *J. Obst. & Gynec. Brit. Emp.* 32: 298, 1925.

the serum except in probably one instance (M. S.) but rather due to the rapidity of the extension of the infection (generalized peritonitis). It is again evident that serum is of no value in the treatment of this type of infection.

The deaths in the control group (table 5) may be considered as those due to early fulminant peritonitis and, in a larger group, to delayed development of peritonitis and other pathologic states. The assumption might be warranted that in the latter group the early use of serum might have prevented the progression to peritonitis and the other fatal complications (septicemia, thrombophlebitis and septicopyemia). There were no deaths from septicemia or thrombophlebitis with septicopyemia in the treated group.

Mention may be made of the procedure of sending an adequate supply of serum to ten different obstetric clinics for further clinical evaluation. The reports were incomplete and could not be used for any statistical study.

CONCLUSIONS

1. The value of antitoxic serum therapy in the treatment of early hemolytic streptococcus puerperal sepsis is demonstrated by the marked reduction in mortality and residual pathologic changes in a controlled series of cases.

2. The early diagnosis of hemolytic streptococcus puerperal sepsis is essential for the successful use of the antitoxic (hemolytic) streptococcus serum.

3. Failures despite early therapy may be due to the abnormally rapid progression of the infection (fulminant form of generalized peritonitis).

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PEPTIC ULCER IN SYPHILIS OF THE CENTRAL NERVOUS SYSTEM

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While studying a series of cases of syphilis of the central nervous system we were impressed by the number of patients who entered the hospital complaining of nausea, vomiting, hematemesis and epigastric pain. Complete study of these cases gave results which are at variance with our previous conceptions and constitute the basis for this report.

MATERIAL AND METHOD

All cases of syphilis of the central nervous system admitted to an active, large general hospital during a period of approximately four years were studied. Each case was examined by one or more of us. A few of these cases presented other primary causes for hospitalization, such as pulmonary tuberculosis. In each case complete examination facilities were utilized, so that gastric analyses and roentgenologic study of the gastrointestinal tract were accomplished in all indicated cases. All pathologic changes found on roentgen examination were verified after the administration of belladonna

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and atropine. Only patients in whom abnormalities were found on repeated roentgen examination and who had definite gastric symptoms were placed in the ulcer group.

All cases presented clear-cut neurologic, psychiatric and spinal fluid signs of syphilis of the central nervous system. A minimum of two examinations of the spinal fluid was made in each case included in the series. Wassermann and Kahn reactions of the blood were both obtained at least twice in each case. These sero-

TABLE 1.—Incidence of Peptic Ulcers in Syphilis of Central Nervous System and Control Groups

	Syphills of Central Nervous System	Latent Syphilis	Pulmo- nary Tuber- culosis	Serial Admis- sions
Average age, years.....	40.8	38.9	34	35.2
Total cases.....	200	200	100	100
Total peptic ulcers.....	21	3	1	3
Incidence of peptic ulcer, per cent.....	10.5	1.5	1.0	3.0

logic reactions of the blood were negative or only incompletely positive in approximately 30 per cent of our cases. Cases incompletely studied or those presenting questionable clinical conditions were excluded from the series. This accounts for an additional thirty-seven cases. Two hundred cases of syphilis of the central nervous system remained for study.

The controls for our observations on these patients with syphilis of the central nervous system were three other groups of patients in the hospital during the period of study. The method of study was identical with that outlined for the neurosyphilis group. These control groups consisted of:

1. Two hundred patients with latent syphilis. Each of these patients repeatedly had completely positive blood Wassermann and Kahn reactions without any demonstrable clinical or serologic involvement of the cardiovascular or central nervous systems.

2. One hundred patients with pulmonary tuberculosis, none of whom had syphilis.

3. One hundred patients consecutively admitted to this hospital.

In addition to the basic study of 200 patients with syphilis of the central nervous system and the control groups, we studied the records of 100 patients with peptic ulcer, who had been examined and treated in the hospital, for evidence of syphilis of any type.

OBSERVATIONS

The incidence of peptic ulcer in our series of cases of syphilis of the central nervous system was 10.5 per cent, while this condition occurred in the control series in from 1 to 3 per cent of the cases, as shown in table 1.

The characteristics of peptic ulcer as we observed them in our series of patients with syphilis of the central nervous system were of interest and, we believe, of significance. The symptoms presented in this group were characteristic of ulcer of the duodenal, gastric or anastomotic areas. The roentgenologic aspects were those of peptic ulcer of these areas without reference to any underlying or accompanying systemic disease. The gastric analyses were, however, of considerable interest in that thirteen of the twenty-three patients having both syphilis of the central nervous system and peptic ulcer had repeatedly low determinations of total and

clinically or roentgenologically to differentiate syphilitic from nonsyphilitic ulcerations.

Several workers have engaged in prolonged arguments over the validity of so-called biopsy-proved cases of syphilis of the upper gastrointestinal tract. Thus Singer¹³ is skeptical that McNee's¹⁴ case is one of true syphilis of the stomach. Harris and Morgan,¹⁵ however, appear to have definitely established the existence of syphilis of the stomach as an experimental, if not a clinical, entity. Unfortunately, some of the cases of so-called syphilis of the gastrointestinal system reported are diagnosed on questionable evidence.

We are not able, from our data, to correlate the many divergent views on the subject of involvement of the upper gastrointestinal tract by syphilis. From our data it is clear, however, that peptic ulcer occurs with significant frequency in cases of syphilis of the central nervous system. It is interesting to note that Hunt and Lisa¹⁶ also noted the occurrence of the two conditions in the same patients but they reported their observations as clinical curiosities. Since we found no increase in the incidence of peptic ulcer in our patients with syphilis without involvement of the central nervous system, we have no justification for regarding peptic ulcers occurring in syphilitic patients as necessarily syphilitic in origin. This view is further confirmed by our failure to find an increased incidence of somatic syphilis in our patients known to have peptic ulcer.

Cushing's⁴ observations suggest the possibility that syphilis of the central nervous system is an etiologic factor of significance in our cases of peptic ulcer. Instead of gastric hyperacidity, however, as would be anticipated from Cushing's nerve irritation theory, we noted gastric hypo-acidity (table 2) in a significant number of our cases. We did note gastric hypermotility in all our ulcer cases. Rivers¹⁷ has suggested that "peptic ulcer is the result of several interacting and variable factors." Since syphilis may involve not only the central nervous system but also the vascular system, it is possible that abnormalities of both these systems played a part in the production of the peptic ulcers we found. The work of Mayo,¹⁸ of Reeves¹⁹ and of Wilkie²⁰ all show clearly the significance of vascular pathologic changes in the etiology of peptic ulcer. Among our twenty-one patients with syphilis of the central nervous system and peptic ulcer, nine also had syphilis of the cardiovascular system of such severity as to preclude treatment by fever therapy. The possibility that the role of syphilis in the production of such peptic ulcers is by involvement of the central nervous and vascular systems is interesting but is not proved by our data.

CONCLUSIONS

1. There is a greater incidence of peptic ulcer in patients with syphilis of the central nervous system

than in those with latent syphilis or pulmonary tuberculosis without syphilis or in unselected hospital patients.

2. Syphilis does not appear to be of direct etiologic significance in such cases.

3. The incidence of peptic ulcer in cases of neurosyphilis in this series (10.5 per cent) is much higher than that reported from other clinics.

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VITAMIN D COMPLEX IN KERATOCONUS

ETIOLOGY, PATHOLOGY AND TREATMENT OF
CONICAL CORNEA: PRELIMINARY REPORT

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Graves¹ describes keratoconus as "a hyperbolic bulging of the central part, or whole, of the cornea, with thinning of the center, unaccompanied by inflammation or increased tension." In a recent paper from the department of pharmacology of Columbia University College of Physicians and Surgeons, Blackberg and I² reported the consistent production of keratoconus in dogs fed a vitamin D deficient, low calcium diet. We have repeated these experiments on rats this past winter and have noted similar results.

In our experiments on dogs, we enucleated the eyes of some of them. These eyes were examined microscopically. The results of our pathologic examinations, corroborated by Drs. Reese and Laidlaw, have been published.³ The basic changes in the corneas were thinning of the epithelium, edema of the substantia propria with irregularity of its lamellar structure and reduplication of the endothelium, with hydropic degeneration.

Nineteen eyes (twelve patients) with keratoconus are included in this study. One patient is presented so that the marked ectasia of the right cornea before beginning treatment may be observed. The other eleven patients have been treated for periods ranging from three months to three years. Of these eleven, seven have bilateral involvement. Four show the condition to be present in one eye and absent in the other. Of these four, three have a right keratoconus and one a left. There is a range from the slight degree of conical cornea, not readily made out, to the very marked case with perforation of the posterior layers of the membrane, epithelial cyst formation and central opacity.

Vitamin D, in the form of viosterol, and calcium, in the form of mineral mixture tablets, were prescribed.⁴

Assistance was given by Miss Diana Shrage of the New York Eye and Ear Infirmary.

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From the New York Eye and Ear Infirmary and the Montefiore Hospital, through the generosity of the attending eye surgeons of these two institutions.

Read before the New York Academy of Medicine, Section on Ophthalmology, Dec. 20, 1937, and the North Jersey Academy of Medicine, Section on Ophthalmology, May 9, 1938.

1. Graves, B., in Berens, Conrad: *The Eye and Its Diseases*, Philadelphia, W. B. Saunders Company, 1936, p. 481.

2. Blackberg, S. N., and Knapp, A. A.: *Ocular Changes Accompanying Disturbances of Calcium-Phosphorus Metabolism*, Arch. Ophth. **11**: 665-669 (April) 1934.

3. Blackberg, S. N., and Knapp, A. A.: *The Influence of the Vitamin D-Calcium-Phosphorus Complex in the Production of Ocular Pathology*, Am. J. Ophth. **29**: 485 (April) 1937.

4. Mead Johnson Company's products: Viosterol: One gram contains not less than 10,000 vitamin D units (U. S. P.); 40 drops to a gram. Mineral Mixture Tablets. No. 85: Composition: alfalfa ash 4 per cent, dicalcium phosphate 32 per cent, edible bonemeal 64 per cent; analysis: moisture 2 per cent, protein 6 per cent, fat 2 per cent, minerals (ash) 90 per cent; each tablet supplies calcium 140 mg., phosphorus 83 mg., iron, 1 mg., copper 0.05 mg., magnesium 2.8 mg., sodium 5 mg., potassium 5 mg.

13. Singer, H. A.: Syphilis of the Stomach, Arch. Int. Med. **51**: 754 (May) 1933.

14. McNee, J. W.: Syphilis of the Stomach, Quart. J. Med. **15**: 215 (April) 1922.

15. Harris, Seale, and Morgan, H. J.: The Isolation of Spirochaeta Pallida from the Lesion of Gastric Syphilis, J. A. M. A. **99**: 1405 (Oct. 22) 1932.

16. Hunt, E. L., and Lisa, J. R.: Peptic and Duodenal Ulcer in Tabes Dorsalis, J. A. M. A. **96**: 95 (Jan. 10) 1931.

17. Rivers, A. B.: Clinical Consideration of the Etiology of Peptic Ulcer, Arch. Int. Med. **53**: 97 (Jan.) 1934.

18. Mayo, W. J.: Pathologic Data Obtained from Ulcers Excised from the Anterior Wall of the Duodenum, Ann. Surg. **57**: 691 (May) 1913.

19. Reeves, T. B.: A Study of the Arteries Supplying the Stomach and Duodenum and Their Relation to Ulcer, Surg., Gynec. & Obst. **30**: 374 (April) 1920.

20. Wilkie, D. P. D.: The Blood Supply of the Duodenum with Special Reference to the Supraduodenal Artery, Surg., Gynec. & Obst. **13**: 399 (Oct.) 1911.

Dosage of the latter varied with the milk intake. If a patient drank one quart of milk daily, one tablet was prescribed. For each glass less than this, two tablets were added. The calcium was taken before breakfast, in one dose. As a routine, sixty drops of viosterol was given daily, after the morning meal. Lately the dose has been increased to 200 drops in some cases. No other change was made in the diet or regimen.

COMMENT

All of the eleven patients treated with viosterol and mineral mixture tablets have improved subjectively and objectively. Subjectively there is improved vision. Objectively there is corresponding improvement. Refraction, macroscopic, corneal microscopic and ophthalmometric examinations were done to give an adequate index of how much progress had been made. Recently, to be more accurate, I have been using plaster-of-paris casts of the anterior segments of the eyes, before and after treatment. Six molds were made of the eyes of three patients before this therapy was started and then repeated three to six months later. Without exception the later casts showed the cones to be flatter, with less of a hyperbolic curve. With the assistance of Prof. Carlos de Zafra of the engineering department and Prof. Louis Granath of the physics department of New York University the relative height of the corneas was measured.

More detailed examination shows that in five of the six eyes—both eyes of patients 1 and 2, and the right eye of patient 3—a reduction in the height of the cone took place. The sixth—the left eye of patient 3—showed an increase. These figures may represent an underestimation of the decrease in the height of the cones, for it must be remembered that the underlying pathologic condition of keratoconus in dogs, and probably in man too, is edema of the cornea; and with the type of measurement employed, a standard base line of fixed length, a greater chord of the shrunken globe after treatment would be included in the examination. Thus it can be seen that the eye which apparently had a more pronounced protrusion after the treatment had been taken for three months; actually may have had a less prominent cone. The twelfth patient brings out this point more vividly. She has been taking viosterol and mineral mixture tablets for three years. At the onset, both interpalpebral fissures were approximately equal in the vertical meridian. She had a severe keratoconus of the right eye, with epithelial cyst formation, and a mild myopia in the left. Today there is a definite ptosis of the right upper lid. Probably this ptosis is due to a shrunken globe; for in a subsequent paper I will show, by actual measurements, that the sclera, too, may undergo shrinkage after the administration of this therapy.

CONCLUSION

A consideration of this material suggests that the calcium-phosphorus metabolism is an important factor in the development of the cornea. It would appear that the lack or deficiency of these metabolic factors would favor weakness of the membrane. This weakness then may manifest itself as a primary, noninflammatory ectasia of the cornea. The administration of vitamin D and calcium in this condition has given gratifying results. In fact, the results apparently are so encouraging that it may be we have come upon a factor or the factor in the etiology of this perplexing pathologic condition. It is true that but eleven patients (eighteen

eyes) with a rare condition have been treated. Still, the regular decisive improvement of all suggests that the vitamin D complex has a definite place in the therapy of keratoconus. It is hoped that further observations along this same line will serve to give a more conclusive conception of its place in our understanding and treatment of keratoconus.

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BENZEDRINE SULFATE

ITS LIMITATIONS IN THE TREATMENT OF THE
SPASTIC COLON AND A PHARMACOLOGIC
STUDY OF ITS EFFECTS ON THE
GASTROINTESTINAL TRACT

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Since the advent of benzedrine as a useful topical applicant to the nasal mucosa, benzedrine sulfate (benzyl methyl carbinamine sulfate¹), by virtue of its central stimulating action, has been exhibited for the relief of so many symptoms and disorders as to become almost a panacea. Such excellent reviews of the literature have already appeared, notably by Wilbur, MacLean and Allen² and by the Council on Pharmacy and Chemistry of the American Medical Association³ as well as an editorial in the *British Medical Journal*⁴ that similar summaries would at this time be wholly supererogatory. Suffice it to say, benzedrine sulfate appears to be of definite value in the treatment of narcolepsy and post-encephalitic parkinsonism and, only to a restricted degree in the management of certain mild depressive states and in some cases of chronic exhaustion. Although it has been reported as beneficial in the treatment of orthostatic hypotension,⁵ migraine⁶ and syncope due to a hyperactive carotid sinus reflex,⁷ the number of patients studied have been too few to permit of any conclusions. More recently, Lesses and Myerson⁸ found it helpful in the treatment of obesity.

Myerson and Ritvo⁹ directed attention to the value of benzedrine sulfate in relaxing spasm of the gastrointestinal tract and pyloric sphincter. Its gastric effects

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From the Departments of Medicine, Roentgenology and Gastro-Intestinal Research of Michael Reese Hospital.

1. The benzedrine sulfate used in this study was supplied by Smith, Kline & French Laboratories, Philadelphia.

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6. Davis, P. L., and Shumway-Davis, Margaret: Orthostatic Hypotension: The Treatment of Two Cases with Benzedrine Sulfate, J. A. M. A. 108: 1247 (April 10) 1937.

7. Nathanson, M. H.: The Central Action of Beta-Aminopropylphenetol (Benzedrine), J. A. M. A. 108: 528 (Feb. 13) 1937.

8. Robinson, L. J.: Benzedrine in the Treatment of Syncope Due to a Hyperactive Carotid Sinus Reflex, New England J. Med. 217: 952 (Dec. 9) 1937.

9. Lesses, M. F., and Myerson, A.: Human Autonomic Pharmacology: XVI. Benzedrine Sulfate as an Aid in the Treatment of Obesity, New England J. Med. 218: 119 (Jan. 20) 1938.

10. (a) Myerson, Abraham, and Ritvo, Max: Benzedrine Sulfate and Its Value in Spasm of the Gastrointestinal Tract, J. A. M. A. 107: 24 (July 4) 1936. (b) Ritvo, Max: Drugs as an Aid in Benign Enlargement of the Gastrointestinal Tract: The Use of Methylal, Physostigmine and Benzedrine in Overcoming Atonicity, Sluggishness of Peristalsis, and Spasm, Am. J. Roentgenol. 26: 868 (Dec.) 1936.

included a moderate decrease in tonicity and a decrease in the emptying time; peristalsis diminished little if any, although in some cases it was increased. Hence, they advocated it as a roentgenologic aid in the differential diagnosis between functional and organic spasm. Therapeutically, they found it efficacious in the treatment of "spastic colitis" and pylorospasm. Smith and Chamberlin¹⁰ observed a delayed emptying of the stomach and delayed motility of the small intestine and noted relaxation of spasm of the the duodenum and of the colon.

In an effort further to define its scope of usefulness, we undertook a cooperative study of its value in the treatment of the spastic colon ("unstable colon," "irritable colon") and of its pharmacologic action on the stomach, small intestine and colon.

SPASTIC COLON

Method.—Careful, detailed histories were taken and complete physical examinations, including a blood count, analysis of the urine and stool, an Ewald test meal, Wassermann and Kahn tests, cholecystograms and roentgenographic studies of the gastrointestinal tract were made in all cases. Only those patients presenting no physical abnormalities other than a spastic, irritable colon were selected for therapy. All patients with the exception of two (1 and 3) had been receiving but were refractory to the usual orthodox regimen (bland diet, atropine sulfate or belladonna, and sedation). Sedatives and antispasmodics were discontinued, and benzedrine sulfate (from 5 to 10 mg. orally) was substituted before breakfast and before lunch; in three cases an additional 10 mg. dose was taken before supper.

Results.—Of eighteen patients who were treated with benzedrine sulfate, three were improved, one noted improvement followed by a recurrence while taking the drug, eleven were unimproved, and in three the symptoms were aggravated (table 1). The results obtained were both unpredictable and varied, for in some cases improvement followed the administration of from 15 to 30 mg. daily (cases 1, 2 and 3), while in others untoward effects and exacerbations occurred after as little as 10 mg. (cases 16 and 17). Increasing the dose to as much as 30 mg. orally afforded no benefit when smaller doses were ineffective, notwithstanding the production thereby of undesirable side effects (cases 4 and 10). It is noteworthy that the patients manifesting improvement presented symptoms of lesser severity than the others and that those individuals reporting exacerbations of their symptoms possessed, in common, a more unstable, poorly integrated personality. Paradoxically, the duration of illness seemed unrelated to the therapeutic outcome.

Patient 5, unrelieved by benzedrine sulfate, subsequently responded well to the combined use of sodium bromide, bismuth subcarbonate and calcium gluconate. Patient 16, whose symptoms were intensified, noted distinct improvement when sodium bromide and atropine sulfate were substituted for benzedrine sulfate. Of interest is the diminished frequency and intensity of menopausal flushes and perspiration reported by patient 3, and relief of dysmenorrhea by patient 4.

Untoward effects, recorded by most observers and differing only in their nature, intensity and incidence, were noted in ten cases, although in three of these the effects were transitory. The more common symptoms were exhilaration, increased alertness, insomnia and

dryness of the mouth and throat. The other symptoms were diverse and included marked weakness, dizziness, faintness, intense headache, tremor, palpitation, dyspnea, tachycardia, anxiety, increased irritability, numbness, pollakiuria and transitory deafness. A fine papular, erythematous rash appeared on the face, neck and upper extremities of patient 10 three and a half hours after the onset of a severe reaction to 30 mg. of benzedrine sulfate orally and was accompanied by itching and tingling of the skin; a temperature of 95.5 F. by mouth was recorded an hour and a half later. In all cases these effects subsided within twenty-four hours.

Roentgenologic Observations.—The action of benzedrine sulfate on the colon was studied roentgenographically¹¹ in five cases (2, 8, 9, 11 and 12). Myerson



Fig. 1 (case 9).—Physiologic variations in the pattern of the colon when two successive enemas are given (A and B; C and D). The barium enema following 30 mg. of benzedrine sulfate orally (D) shows no greater degree of relaxation in the transverse and descending colon than the control (B) one day earlier. The spasm in the ascending colon and hepatic flexure in the control B is not present in the controls A and C.

and Ritvo⁹ observed roentgenoscopically that, following the oral administration of benzedrine sulfate, in cases of spasticity of the colon, a subsequent barium sulfate enema may be given more rapidly and with less discomfort and that the lumen of the colon is increased, the haustrations are broader and shallower and the contractions and irregularities are markedly diminished, if not abolished.

It is a matter of frequent observation, however, to note such changes with a second barium sulfate enema after a period of rest and without any medication. Hence patients 8 and 9 were given a barium sulfate enema and a film of the colon was taken. Fifteen minutes after evacuation this procedure was repeated. On

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11. Drs. S. D. Mesriow and Philip Levitsky assisted in the radiographic work.

the following day, similar examinations were made, 30 mg. of benzedrine sulfate being given fifteen minutes before the second enema. In case 9 the second enema without medication (fig. 1 B) shows less marked and fewer haustrations and the lumen of the colon is broader than that of the preceding enema (fig. 1 A),

spasm in the ascending colon in the other control films (A and C) illustrates clearly the normal variations in the pattern of the colon from day to day and from one observation to the other. In case 8 the film taken after benzedrine shows a wider lumen in the descending and transverse colon and a contracted ascending colon and

TABLE 1.—Results in the Treatment of the Spastic Colon

Patient			Symptoms and Duration	Benzedrine Sulfate	Effects		Comment
No.	Age	Sex			Gastrointestinal	Miscellaneous	
1	50	♀	Right lower quadrant and umbilical pain; bloating, constipation; chronic exhaustion; 3 yrs.	10 mg. three times a day for 4 wks.	Improved	Nose, mouth and throat very dry	No previous therapy
2	40	♀	Right lower quadrant pain, 3 wks.; belladonna, bromide and diet ineffective	10 mg. and 5 mg. daily for 1 wk.*	No pain since benzedrine was started	.....	1 yr. ago symptom* relieved by belladonna, bromide and diet
3	50	♀	Sharp lower abdominal pains after meals for years; 2-3 bowel movements daily; 1 mo.	10 mg. and 5 mg. daily for 1 wk.*; 10 mg. twice a day for 1 wk.	Pain disappeared in 1 day; b.m.'s. normal after larger dose was given	Nose, mouth and throat very dry	Hot flushes (menopausal) less frequent and milder
4	33	♀	Right lower quadrant pain and diarrhea when tired, 1 mo.; bland diet and atropine gave much relief but not complete; mucus 4+	10 mg. and 5 mg. daily for 7 days, then 10 mg. twice a day*	No pain after 4 days; recurred in 12 days while on benzedrine; mucus as before	Peppler and tender; less tired; 20 mg. daily caused headache 4+; very irritable, more alert	Same symptom* 2 yrs. ago; complete relief by belladonna and bromide; dysmenorrhea relieved
5	33	♂	Epigastric pressure; flatulence; "pencil" stools; tiredness 4+ off and on; 3 yrs.	10 mg. and 5 mg. daily for 12 days*	Unimproved	½ hr. after 10 mg. felt "peppy" for 1 hr.	Improved on bromide, bismuth sub-carbonate and calcium gluconate
6	20	♀	Marked constipation; occasional cramps and diarrhea; mucus; chronic exhaustion; 1 yr.; refractory to all therapy	5 mg. twice a day for 4 days; 10 mg. twice a day for 10 days	Unimproved	.....	Basal metabolic rate -2
7	19	♀	Severe abdominal cramps; bloated; constipation; mucus, 1 yr.; refractory to all therapy	10 mg. twice a day for 2 wks.	Unimproved	.....	.....
8	39	♀	Nausea; abdominal pains; exhaustion; 1 yr.	10 mg. twice a day for 17 days	Unimproved	Exhaustion improved for 1 wk.; then relapse	.....
9	27	♀	Abdominal pains; alternating constipation and diarrhea; mucus; marked diffuse abdominal tenderness; tired; 8 mos.	10 mg. twice a day for 4 wks.	Unimproved	Frequent urination; tiredness unimproved	.....
10	29	♀	Right lower quadrant and umbilical pains; bloating; alternating constipation and diarrhea 4+ mucus; tired; weak; 2 yrs.	10 mg. and 5 mg. daily for 7 days; 10 mg. twice a day for 7 days; 10 mg. three times a day for 7 days	Unimproved	30 min. after 50 mg.: tremor, severe abdominal cramps, "faintness," numbness, dizzy, pressure in head, diminished hearing; very weak, rash; temperature 95.5 F., nausea	.....
11	36	♀	Abdominal cramps, diarrhea mucus, bloating, constipation, tired; 3 yrs.	10 mg. twice a day for 24 days	Unimproved	Tiredness unimproved	.....
12	34	♀	Abdominal cramps, recurrent diarrhea, urgency, mucus, distention, nausea; 2 yrs.	10 mg. twice a day for 24 days	Unimproved	Temporary insomnia, palpitation and dyspnea; mouth dry	.....
13	50	♀	Abdominal cramps, diarrhea, mucus 4+, diffuse abdominal tenderness; 6 yrs.; refractory to all therapy	10 mg. twice a day for 8 days	Unimproved	.....	.....
14	46	♀	Epigastric cramps, fullness, diarrhea and urgency after meals; 7½ yrs.	10 mg. and 5 mg. daily for 1 wk.*; 10 mg. twice a day for 1 wk.	Unimproved	.....	.....
15	42	♀	Generalized abdominal pains, and constipation	10 mg. twice a day for 1 wk.; 10 mg. three times a day for 1 wk.	Unimproved	.....	.....
16	25	♀	Epigastric cramps; alternating constipation and diarrhea; mucus; exhaustion; 1 yr. off and on	10 mg. twice a day for 1 day	Pain and diarrhea increased	Markedly weak, dizzy, "faint," palpitation, tachycardia, tremor and anxiety 3 hrs. after 1st dose; lasted 20 hrs.	Bromide and atropine resumed; improvement
17	19	♀	Abdominal pains, diarrhea, urgency, mucus 4+; 4-5 yrs.; refractory to all therapy	5 mg. twice a day for 1 day	Severe cramps; diarrhea increased	"Exhilaration"; insomnia	.....
18	33	♀	Abdominal cramps; alternating constipation and diarrhea; mucus; 8 yrs.; drowsy, exhausted	10 mg. twice a day for 2 wks.	Pain increased; developed mild right upper quadrant pain; b.m.'s. unchanged	More alert; insomnia; dry mouth	.....

* Ten mg. before breakfast, and 5 mg. before lunch.

thus demonstrating the physiologic effect sometimes noted with successive enemas, as previously referred to. Following benzedrine sulfate (fig. 1 D), little if any change can be demonstrated when compared with the preceding control enema (fig. 1 C). When the filling of the colon following benzedrine (D) is compared with that of the control (B), the latter shows a slightly wider lumen in the descending colon and spasm of the ascending colon and hepatic flexure. The absence of

cecum, the number of haustrations in the transverse colon being the same as in the control (fig. 2). It is worthy of note that the spasm in the ascending colon may in itself, by distal expulsion of the barium, account for the wider lumen in the transverse and descending colon, without the latter being ascribed to a benzedrine effect.

A different series of observations were made in cases 2, 11 and 12. A barium sulfate enema was given on

one day, and the film taken was used as a control. Two days later this procedure was repeated, 30 mg. of benzedrine sulfate being administered orally twenty-five minutes before the enema was given. In case 2 no apparent change in the pattern of the colon was noted following benzedrine, yet clinically distinct improve-



Fig. 2 (case 8).—Control (A) followed by second enema (B) fifteen minutes after 30 mg. of benzedrine sulfate orally. Apparent relaxation of the transverse and descending colon with contraction of the ascending colon and cecum following benzedrine (B).

ment was reported (table 1). In case 12 there appeared to be little if any effect other than slightly increased spasm in the descending colon and better filling in the

TABLE 2.—Gastric Emptying Time of Dogs Following Subcutaneous Injection of Benzedrine Sulfate

Dog	Benzedrine Sulfate, Mg Subcutaneously	No. of Tests	± % Change from Average Emptying Time
2.....	0.5	1	+21
	2.0	1	+37
	5.0	2	-23, -5
	10.0	2	+39, +20
	25.0	2	+61, +40
3.....	0.5	1	+13
	2.0	1	-7
	5.0	1	+45
	10.0	1	+79
	25.0	2	+91, +73
6.....	25.0	1	+35
7.....	5.0	1	+37
	30.0	1	+25
8.....	1.0	2	+31, -7
	2.0	3	+11, -10, -28
	5.0	1	+15
	10.0	1	+62
9.....	25.0	2	+108, +147
	25.0	1	+85

* Weighed 15 Kg.; all others 10 Kg.

ascending colon. Patient 11 showed definite relaxation of the colon following benzedrine (fig. 3), although no improvement was manifest therapeutically (table 1).

PHARMACOLOGIC STUDY OF THE EFFECTS OF BENZEDRINE SULFATE ON THE STOMACH AND SMALL INTESTINE OF DOGS

A study on dogs was undertaken first in order to exclude "reversal" effects with increasing doses of benzedrine and, secondly, in order to analyze the action of this drug more closely than could be done on human subjects.

All dogs used were thoroughly trained to our procedures. They were used only twice a week and the interval was sufficient for complete emptying of residual

barium from the bowels. Before and after every experiment controls were performed without drugs, and only such experiments are reported in which the dogs appeared to be in good health and in which the controls were uniform. The barium meal was given by stomach tube and consisted of 130 Gm. of barium sulfate, 30 Gm. of dried whole milk (Klim)¹² and 300 cc. of water. This meal was found to be very satisfactory and to yield rather constant control values. The emptying time was counted from the first appearance of barium in the duodenum until from 95 to 100 per cent of the barium had left the stomach. Benzedrine sulfate was given by subcutaneous injection at the time of the barium meal. In a number of tests roentgenograms were taken in addition to the fluoroscopic observations. Forty-five tests with benzedrine sulfate and more than 200 control observations were performed on six dogs.

From table 2 it appears that in most experiments a delay in emptying occurred with small and large doses of benzedrine sulfate and that the prolongation of the emptying time was roughly proportional to the dose. According to body weight, the dose of 5 mg. in dogs 2, 3, 7, 8 and 9 corresponds approximately to the dose of 30 mg. given to human beings. In a few experiments the emptying time was shortened. It is not believed, however, that this represents a true reversal effect, because the changes were too inconsistent (e. g., dog 8 in table 2). For approximately fifteen minutes after injection of benzedrine sulfate the stomach emptied with normal speed; thereafter an almost complete closure of the pylorus occurred, which lasted from an hour to an hour and a half. This was true for doses from 0.5 to 30 mg., but with the smaller doses this effect was of shorter duration. From ninety to 120 minutes after injection practically normal emptying was resumed. While the stomach appeared to have less tonicity when its emptying was inhibited by benzedrine, nevertheless waves of peristalsis were observed (figs. 4 and 5). These were not able, however, to propel



Fig. 3 (case 11).—Barium enema on different days. A, without benzedrine; B, twenty-five minutes after 30 mg. of benzedrine sulfate orally. Relaxation of the transverse colon (B) apparent. Clinically no improvement.

barium through the pylorus. Neither tilting of the dogs nor manual pressure exerted on the stomach was effective in forcing barium into the duodenum. At the time when more or less complete arrest of emptying of the stomach occurred, the duodenal cap, which was usually seen in our controls, was not visible; further, we observed during this time a state of spasticity of the

12. The Borden Company supplied the Klim for this study.

small bowel and an arrest of propulsion, with a thinning and in part beady appearance of the barium, which before was present in large, more or less continuous masses. The spasm of the small intestine disappeared when the effect of benzedrine wore off and normal emptying of the stomach was resumed. This observa-

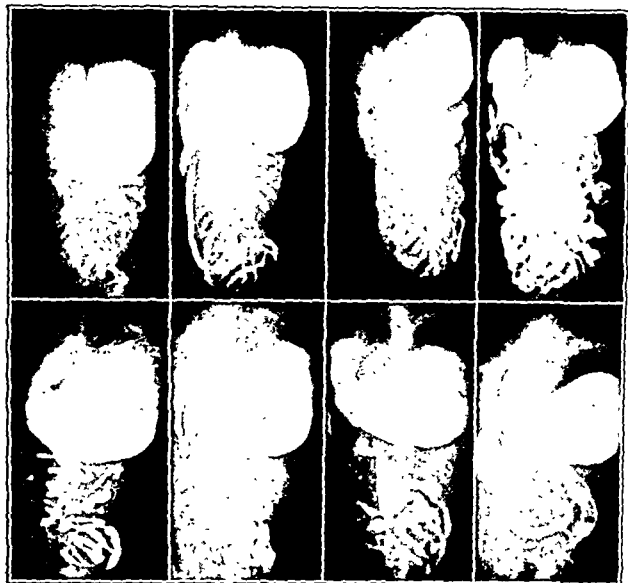


Fig. 4 (dog 3).—Upper row: controls thirty, sixty, ninety and 120 minutes following barium meal; lower row: thirty, sixty, ninety and 120 minutes following barium meal and injection of 20 mg. of benzedrine sulfate. At the end of thirty minutes a second injection of 5 mg. of benzedrine sulfate was given. Note the disappearance of the duodenal cap and the contraction of the small intestine at the sixty and ninety minute periods as compared to the control. A lump of barium is retained in the descending part of the duodenum, and the barium in the small intestine appears discontinuous, thinner and in parts beady.

tion of a spastic contraction of the small intestine was more apparent when the benzedrine sulfate was injected thirty or sixty minutes after the giving of the barium meal. In the latter experiments a considerable amount of barium had by this time left the stomach and had accumulated in the small intestine in large, more or less continuous masses. Approximately fifteen minutes after injection propulsion of these masses ceased, and they assumed a streaky, beady appearance as already described.

In view of these observations, the emptying time of the stomach was studied in two normal human subjects, the control observations of one day being compared with those noted three days later after 30 mg. of benzedrine sulfate administered with the barium meal. In both cases benzedrine prolonged the emptying time approximately one hour. Spasm of the pylorus appeared fifteen minutes after the administration of benzedrine and lasted thirty minutes, and motility of the small intestine was delayed, thus concurring with the studies on dogs.

COMMENT

The disappointing clinical results observed in the treatment of the spastic colon are at variance with the beneficial effects reported by Myerson and Ritvo,¹³ but find corroboration in the variety of antithetic symptoms noted by Davidoff and Reifstein.¹³ Moreover, the diverse effects observed roentgenographically and herein recorded afford some explanation of our clinical failures and leave much to be desired therapeutically.

It must be pointed out that in the treatment of this disorder, the symptoms of which are so closely correlated with the psychic state of the individual, very often the mere change to a bland diet, reassurance, warm applications to the abdomen, rest, relaxation or mild sedation will effect improvement and that, unless carefully controlled studies are conducted, evaluation of the efficacy of this drug is difficult. Further, the differentiation between the physiologic variations and the pharmacologic effect of benzedrine sulfate by means of barium enemas may yield untrustworthy results, as indicated by the foregoing studies.

Pharmacologically, benzedrine has been described as a drug with prevailing effects through the sympathetic nervous system. It may therefore be that per se, like the closely related ephedrine,¹⁴ it produced in our dogs a contraction of the pylorus similar to that observed frequently following stimulation of the splanchnic nerves. The same mechanism may also have produced a relative relaxation of the distended stomach. Another explanation may be found in the observation of Luckhardt, Phillips and Carlson,¹⁵ who noted contraction of the pyloric sphincter resulting from mechanical irritation of the duodenum; this would apply to our results if we assume that benzedrine sulfate produced primarily a spasm of the duodenum. The biologic mechanism of benzedrine seems to be rather complicated, however, and in consequence of a number of fundamental differences between the pharmacologic effects of epinephrine and benzedrine, Tainter¹⁶ designated the latter



Fig. 5 (dog 7).—Same as in figure 4. The inhibition of emptying is more marked than in figure 4.

a pseudosympatheticotropic drug. From their studies on excised segments of the intestine of rabbits, rats, guinea pigs and cats, Detrick, Millikan, Modern and Thienes¹⁷

13. Davidoff, Eugene, and Reifstein, E. C., Jr.: The Stimulating Action of Benzedrine Sulfate, *J. A. M. A.* 108:1770 (May 22) 1937.
14. Van Liere, E. J.; Lough, D. H., and Sleeth, C. K.: The Effect of Ephedrine on the Emptying Time of the Human Stomach, *J. A. M. A.* 106:535 (Feb. 15) 1936.
15. Luckhardt, A. B.; Phillips, H. T., and Carlson, A. J.: Contributions to the Physiology of the Stomach: II. The Control of the Pylorus, *Am. J. Physiol.* 50:57 (Oct.) 1919.
16. Tainter, M. L.: Comparative Actions of Sympathomimetic Compounds, *Arch. internat. de pharmacodyn. et de therap.* 48:192 (Oct. 15) 1933.
17. Detrick, L. E.; Millikan, R.; Modern, F. S., and Thienes, C. H.: On the Pharmacology of Phenylisopropylamine (Benzedrine), *J. Pharmacol. & Exper. Therap.* 60:56 (May) 1937.

concluded that, for visceral structures, benzedrine is neither a true sympathicotropic drug nor a typical muscle stimulant. One of its most frequent side effects in patients is distinct dryness of the mouth, which may be due to an atropine-like action. Probably it also has a direct effect on muscle.¹⁸

From our observations in dog and in man, benzedrine sulfate does not effect a relaxation of the pylorus but produces pylorospasm, prolongation of gastric emptying time and spasm of the small intestine. Our results are thus opposed to those of Myerson and Ritvo,⁹ and in part to those of Smith and Chamberlin,¹⁰ who observed a release of pylorospasm following benzedrine in patients with ulcer and retardation of emptying of the stomach and small intestine in both normal persons and patients with duodenal ulcer. Spasm of other sphincters, namely urinary and rectal, has also been observed following the use of benzedrine sulfate.¹⁰

It is a frequent observation on patients that after a barium meal no gastric emptying occurs for periods up to fifteen minutes; transitory pylorospasm seems to be present and is believed by some to be due to apprehension and fear. Myerson and Ritvo⁹ noted that the effect of benzedrine sulfate on the pylorus began from five to ten minutes after oral administration, whereas Smith and Chamberlin¹⁰ noted almost immediate relaxation of spasm of the duodenum and colon after parenteral administration. This does not necessarily mean that these results should be ascribed to benzedrine, for in man (orally) and in dog (parenterally) we observed a period of approximately fifteen minutes before the drug became effective and a much longer period before its maximum action occurred. This, we believe, explains the discrepancy between our finding of pylorospasm and that of pyloric relaxation noted by the earlier observers.

SUMMARY AND CONCLUSIONS

1. Of eighteen patients with a spastic, irritable colon treated with benzedrine sulfate, three improved, one showed improvement followed by relapse, eleven were unimproved and three were worse. The lack of uniformity in its effects on the spastic colon, as observed roentgenographically in five patients, restricts its clinical usefulness to a considerable degree.

2. In two normal subjects and in the dog, benzedrine sulfate produced pylorospasm and enterospasm and prolonged the emptying time of the stomach and small intestine.

3. Benzedrine sulfate is not recommended in the treatment of spastic disorders of the gastrointestinal tract.

Twenty-Ninth Street and Ellis Avenue.

18. Boyd, E. M.: On the Stimulant Effect of Benzedrine Sulfate, *Proc. Soc. Exper. Biol. & Med.* 37:127 (Oct.) 1937.

19. O'Connor, D. M.: Benzedrine, *Brit. M. J.* 1:43 (Jan. 2) 1937.

Bismarck Challenged Virchow.—For years Virchow was a member of parliament, where he was one of a group, including Mommsen, who were in opposition to Bismarck. In 1865 Virchow defeated the government on a motion to create a German navy, and Bismarck was so enraged that he challenged the professor. The chancellor informed the professor by letter that the minister of war would be one of his seconds. Virchow declined the challenge, saying that his life was too valuable to mankind to be put to the chance of a duel with a politician but proved his courage, ere many years had passed, by his promptitude in going to the front with the medical corps when the Franco-Prussian War broke out.—Carr, James G.: *Rudolph Virchow, Northwestern University Bulletin* 38:1 (Jan. 31) 1938.

HEMOPTYSIS IN MALIGNANT HYDATID MOLE

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Pulmonary hemorrhage, when associated with a neoplasm elsewhere in the body, is a symptom fraught with great concern and is usually regarded as evidence of an early demise on the part of the patient. The portent of pulmonary hemorrhages when associated with invasive hydatid mole has not the same ominous prognosis. We have had the opportunity to study by repeated roentgen examinations and biologic hormone assays a patient with an invasive hydatid mole. In spite of

multiple metastatic (?) pulmonary foci and the resultant bouts of hemoptysis, she made an uneventful recovery following total hysterectomy.

REPORT OF CASE

A married white woman aged 22 was admitted to the Millen Hospital, Millen, Ga., Dec. 9, 1936, with backache, abdominal pain, irregular bleeding from the vagina of five weeks' duration and incessant vomiting



Fig. 1 (Jan. 14, 1937).—Circumscribed foci can be seen scattered throughout both lungs, particularly behind the first, second and third anterior interspaces on left. Biologic hormone assay for gonadotropic substance revealed 5,000 mouse units per liter of urine.

for three weeks. Eleven weeks had elapsed since her last normal menses. She lost 24 pounds (11 Kg.) and now weighed 114 pounds (52 Kg.). Examination revealed a uterus which was enlarged to the size of a three and a half months pregnancy. Pain and bleeding ceased with rest in bed and she was dismissed one week after admission. Jan. 11, 1937, she was readmitted to the hospital because of irregular bleeding, which had become profuse during the ten preceding days. Her weight was further reduced to 102 pounds (46 Kg.). Shortly after admission she had a pulmonary hemorrhage. Six hours later this was followed by a second but more profuse one. Pulmonary hemorrhages recurred every two or three days. The uterus was emptied of a hydatidiform mole, which was examined in the pathologic laboratory of the University of Georgia School of Medicine. Bleeding was so excessive as to necessitate packing of the uterus.



Fig. 2 (March 2, 1937).—Note the regression of shadows behind first anterior interspace on both sides. Focal mass still prominent behind right second interspace. Biologic hormone assay for gonadotropic substance revealed 150 mouse units per liter of urine.

The patient was given several blood transfusions. Roentgen study of the lungs January 14 revealed many focal nodules throughout both lung fields (fig. 1). January 15, biologic assay

of the urine for its gonadotropic content revealed 5,000 mouse units per liter.

January 21 a supracervical hysterectomy was performed and the specimen submitted to the University of Georgia School of Medicine for pathologic study.

The first specimen was a bulky hydatidiform mole. Microscopically there was pronounced proliferation of the Langhans cells. This suggested the possibility of invasion. When the uterus was removed it was found to be enlarged to one and a half times the normal size. Two small rounded hemorrhagic areas 1 by 1 cm. were found bulging the serosal surface on the posterior and fundal aspects of the uterus. The lateral serosal surfaces of the uterus showed a bluish mottled discoloration in contrast to the pinkishness of the remaining surfaces. On section

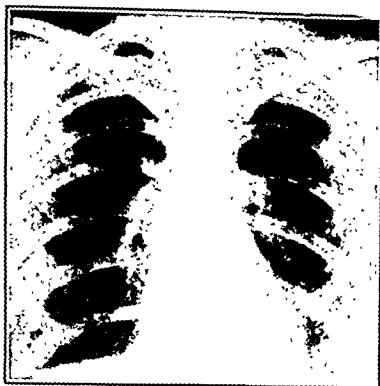


Fig. 3 (Jan. 15, 1938).—Note the disappearance of all focal masses throughout both lung fields. Friedman test negative Nov. 11, 1937.

tion the endometrial cavity and the inner muscular layer of the uterus, particularly near the fundal margins, were filled with a granular, spongy bluish gray tissue. The bluish areas were recognized as enlarged, hydropic villi. The underlying myometrium was deeply invaded by a few of the villi (fig. 4).

Many sections of the uterus revealed the myometrium invaded by villi covered by proliferating layers of Langhans' cells and syncytium. A marked syncytial cell reaction in the surrounding myometrium accompanied this process (fig. 5). In other sections villi were absent but occasional zones of syncytial cell hyperplasia were noted. In some of the venous sinuses, sheets of syncytial cells were observed (fig. 6).

The hemorrhagic nodules previously mentioned showed on section only blood cells and fibrin and were void of trophoblastic elements.

The diagnosis was invasive hydatid mole.

The lung fields were again roentgenographed Feb. 7, 1937 (fig. 2), and some regression of the focal pulmonary masses was in evidence. Another biologic assay of the urine at this

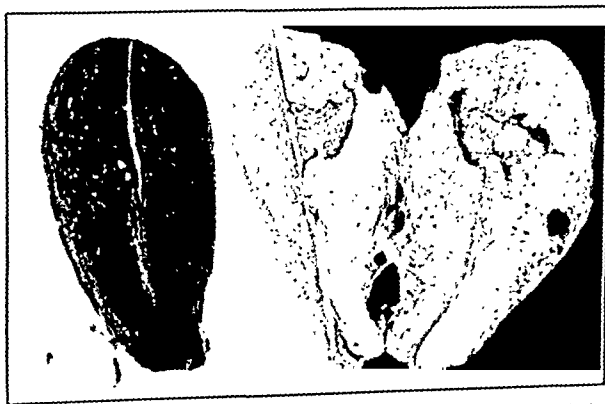


Fig. 4.—Uterus sectioned to demonstrate the invasiveness of the lesion and the site of the two hemorrhagic nodules.

time revealed but 150 mouse units of gonadotropic substance per liter.

On roentgen study of the chest June 15, 1937, the lung fields were clear. Repeated examination of the sputum for tubercle bacilli was negative.

The patient's convalescence was slow but steady and at the present time she is perfectly well.

No radiation therapy was ever attempted. A Friedman test performed Nov. 11, 1937, was negative. Roentgenograms of the chest Jan. 15, 1938 (fig. 3), showed complete regression of the tumor masses.

COMMENT

Schmorl first presented evidence that in pregnancy syncytial masses are often carried from the uterus and lodged in pulmonary and other capillaries. He found these detached cells in the pulmonary veins in 80 per cent of 150 eclamptic patients studied at autopsy. Schmauch,¹ in his exhaustive study on chorionepithelioma, emphasized that the mere presence of chorionepithelial cell masses inside of veins was no proof of a malignant condition. He gave notice that the destructive hydatid moles or placental polyps do not give rise to metastases but often lead to embolism of the lungs and villous infarcts of the vagina. Ewing² quoted Fleischman as having collected from the literature in 1905 seven cases of recovery from "chorioma" with pul-



Fig. 5.—Section of uterus. Note the invasion of the myometrium by villi and the accompanying marked proliferation of the Langhans cell and syncytium layers. In lower right corner a marked syncytial cell hyperplasia pervades the myometrium.

monary metastases. McClellan³ reported a case of atypical chorionepithelioma in which the patient during the course of her illness was seized with sharp pains in the left side of the thorax and began to cough with a bloody expectoration. Examination of the sputum showed syncytial cells. The patient recovered. Lackner and Leventhal⁴ recently reported a case of chorionepithelioma with pulmonary metastases and their patient recovered following extensive courses of radiation therapy.

1. Schmauch, G.: The Histologic and Clinical Significance of Malignant Chorionepithelioma, *Surg., Gynec. & Obst.* 5: 259, 1907.
2. Ewing, James: Chorioma, *Surg., Gynec. & Obst.* 10: 366, 1910.
3. McClellan, B. R.: *Tr. Am. Assn. Obst. & Gynec.* 38: 161, 1915, quoted by Rosenzweig, Maxwell: Syncytial Endometritis and Syncytiorrhoea, *Am. J. Obst. & Gynec.* 13: 563 (May) 1927.
4. Lackner, J. E., and Leventhal, M. L.: Chorionepithelioma of the Uterus, *J. A. M. A.* 98: 1136 (April 2) 1932.

Our patient made a complete recovery without any radiation therapy. This type of case is frequently interpreted as chorionepithelioma with pulmonary metastases in which spontaneous regression has occurred. We are inclined to regard such neoplasms as (locally) malignant hydatid moles and not as true chorionepitheliomas,⁵ although it is quite possible for chorionepitheliomas to arise from such growths. Deportation of syncytial masses or even villi are not infrequent catastrophes in invasive mole. These deportations often lodge in the lungs or vagina and are notoriously known to regress in the majority of instances, particularly after removal of the uterus.

In a process which normally impinges on and proliferates within blood spaces, an occasional pulmonary infarct should not prove astonishing. Therefore pulmonary symptoms, from a prognostic standpoint, should not be valued too highly. However, deported placental cells may proliferate. In molar pregnancy progressive changes will be found constantly in placental cells deported to the lungs, and even in partial mole Schmorl was able to demonstrate an invasion of the wall of blood vessels in the lungs by these cells. Transitory proliferation of these syncytial cells may take place, but their ultimate fate is demonstrated by the cicatrices frequently observed in such lungs. Ewing² doubted that malignant tumors could develop from deported, normal or originally harmless cells of the chorion and placenta.

SUMMARY

In a case of invasive mole, hemoptysis was a prominent feature. Roentgen studies of the chest revealed metastatic foci in the lungs. Following hysterectomy



Fig. 6.—A mass of syncytial cells lie free in one of the uterine sinuses.

and without radiation therapy, the metastatic pulmonary foci regressed and the patient recovered. The biologic hormone assay for gonadotropic substance in the urine was only 5,000 mouse units per liter before hysterectomy and 150 mouse units per liter three weeks after operation. These low hormonal values were in harmony with the regressive features of the neoplasm and were

indicative of a hopeful prognosis. The hemoptyses in such cases are due to pulmonary deportation of villi or syncytial cell masses with transitory proliferation rather than true metastases. Removal of the primary focus, i. e., hysterectomy, should always be performed regardless of the seeming hopelessness of the situation.

Clinical Notes, Suggestions and New Instruments

PYOGENIC OSTEOMYELITIS OF THE SPINE, MEDIASTINAL ABSCESS AND COMPRESSION OF THE SPINAL CORD

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We are reporting this case because of the rarity of the condition (only one similar case is recorded in the literature) and because it illustrates the proper therapeutic approach to osteomyelitis of the spine when it is complicated by mediastinal abscess and compression of the spinal cord.

REPORT OF CASE

S. S., a white boy, aged 17, was admitted to the Montefiore Hospital on May 27, 1937, with a diagnosis of active rheumatic fever. His past history included measles and a tonsillectomy in early childhood. In September 1936 a furuncle appeared on the right cheek, and he squeezed it. Three days later fever and a chill developed. The fever persisted, and after ten days there developed pain, swelling and limitation of motion in the left knee and the right elbow, which lasted three weeks. A diagnosis of rheumatic fever was made by the family physician and a consultant.

The patient was admitted to a hospital, where a heart murmur was allegedly found. After three weeks he returned home and experienced a recurrence of pain in his knee and a transient involvement of his right shoulder. In the middle of November there developed throughout the lower half of the chest a moderately sharp, intermittent and nonradiating pain, which persisted for several weeks.

In the latter part of December he had a severe, viselike, agonizing pain in the back, which radiated around both sides of the chest to the front and was brought on by the slightest motion of his body, even by the slight motion in breathing. This pain subsided after one week.

During all this time an irregular fever and tachycardia were present.

In January 1937 epigastric pain and anorexia occurred. At the same time the patient noted weakness of the left leg and spontaneous movements of both lower extremities. In February he noticed loss of sensation in the lower portion of the trunk and the right lower extremity. His condition remained unchanged until two weeks before his admission to the Montefiore Hospital, in May, at which time he complained of loss of sensation in the bladder, marked dysuria and difficulty in voiding.

On admission, he appeared chronically ill. His weight was 99 pounds (45 Kg.), his temperature 100 F. and his pulse rate 135. Examination gave negative results except for the neurologic observations. No heart murmur was detected.

There was weakness of both lower extremities, with bilateral Babinski signs and ankle clonus. In addition there was impairment of sensation to the level of the eighth dorsal segment. A neurologic consultant confirmed the bilateral signs referable to the pyramidal tract and found an irregular sensory level between the sixth and the ninth dorsal segment. A diagnosis of epidural abscess with compression of the spinal cord was made.

5. Greenblatt, R. B., and Pund, E. R.: An Inquiry into the Nature of So-Called Syncytoma: A Reconsideration of Chorionepithelioma, South. M. J. 31: 140 (Feb.) 1938.

From the Neurological and Surgical Divisions of the Montefiore Hospital.

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Examination of the blood revealed 75 per cent hemoglobin (Sahli), 4,700,000 red cells and 17,500 white cells, of which 74 per cent were polymorphonuclear. A blood culture and the Wassermann reaction were negative.

Lumbar puncture yielded clear fluid. The initial pressure was 160 mm. of water. There were poor rises on jugular



Fig. 1.—Anteroposterior view, showing the spindle-shaped mass in the mediastinum.

compression and delayed return to normal, indicative of partial block. The Pandy test showed a 3 plus reaction; there were 63 mg. of total protein per hundred cubic centimeters and 2 white cells per cubic millimeter.

Roentgenograms of the chest and the vertebral column showed a spindle-shaped mass in the mediastinum, adjacent to the spine (fig. 1), and partial absorption of the fifth and sixth dorsal vertebrae anteriorly (fig.

2). The diagnosis was modified to osteomyelitis of the vertebrae, with mediastinal abscess, and extension of the infection into the spinal canal, with compression of the spinal cord.

On June 4 a diagnostic aspiration was performed posteriorly in the fifth intercostal space, 2 inches to the right of the midline, and sanguineopurulent material was obtained. This showed *Staphylococcus aureus* on smear and culture.

On the following day the patient was operated on under general anesthesia. Portions of the fifth and sixth ribs were

removed paravertebrally on the right side, and a large abscess was incised and drained. The abscess cavity was in direct communication with the vertebral column.

At operation the patient suffered an accidental pneumothorax, and after a rather stormy postoperative course, during which pyopneumothorax developed, he began to improve. At the present time (October 1937) he is up and about and has gained 25 pounds (11 Kg.) since the time of his admission to the hospital, five months ago.

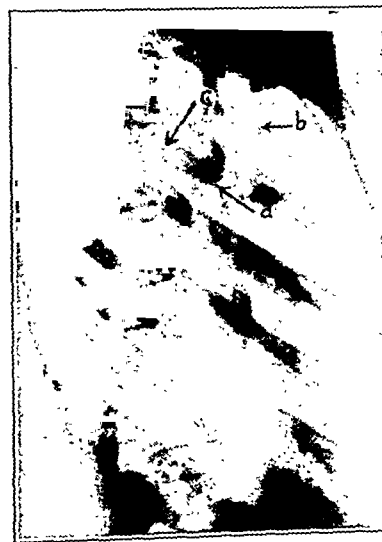


Fig. 2.—Lateral view, showing (a) the mediastinal mass, (b) the trachea displaced anteriorly and (c) partial destruction of the bodies of the fifth and sixth dorsal vertebrae.

A neurologic examination done six days postoperatively showed some return of sensation to the bladder and a moderate increase in the power of the lower extremities. There was slight improvement in sensation, and no Babinski sign could be elicited.

The temperature of the patient gradually fell to normal, and three weeks after the operation no sensory level was demonstrable.

At present there is still a residual hyperreflexia, with slight impairment of the vibratory sense in the lower extremities and minimal weakness of the left lower extremity. Spinal

fluid pressures are normal, and there is no evidence of block. There has been complete resorption of the pleural empyema (fig. 3), and the vertebrae show marked evidence of repair.

COMMENT

The illness probably began with transient bacteremia, secondary to the furuncle on the face. Metastatic involvement of the joints and the dorsal spine followed. There was extension from the latter into the mediastinum anteriorly, with abscess formation, resulting in the diffuse pain in the chest, and later posterior extension into the epidural space, with consequent severe root pain. Slowly progressive compression of the cord then ensued, due possibly either to pressure of frank pus or to the formation of chronic epidural granulation tissue or both. It may have been due to changes in the cord secondary to involvement of the vessels. Operative intervention through the mediastinum permitted drainage and relieved the compression, as was revealed by the neurologic status six days postoperatively.

Schwarz¹ reported a very similar case. A 5 year old girl had osteomyelitis of the vertebrae which ruptured posteriorly and became evident as an abscess of the back. After simple incision and drainage, slight meningeal signs developed. A laminectomy was performed, and pus drained from the epidural space. The dura was covered with granulation tissue. Another laminectomy was necessary at a lower level to permit adequate drainage. The patient did not improve, and it was only after an interval of two months, when x-ray examination revealed the presence of a mediastinal abscess, that a posterior rib resection was done and the abscess drained. The child then recovered. There was no evidence of compression of the cord in this case.



Fig. 3.—Anteroposterior view, showing complete disappearance of the mediastinal abscess. The evidence of the rib resection is apparent on the right.

In our case the decision to drain the abscess through the mediastinum was a fortunate one and resulted in rapid recovery. Had a laminectomy been performed to relieve the compression of the spinal cord, the result (as in Schwarz's case) would not have been as dramatic as it was and the condition might have terminated with fatal meningitis.

In 1904 Hunt² maintained that all acute epidural abscesses are secondary to osteomyelitis of the spine. This view has been accepted by several others but in general has not found wide favor. In July 1937 Browder and Meyers³ reported seven cases of epidural infection; a definite vertebral lesion was discovered in six and could not be excluded in the seventh. Our case is another which illustrates the fundamental relationship of osteomyelitis of the spine to epidural inflammations.

SUMMARY

In a case of osteomyelitis of the spine complicated by mediastinal abscess and epidural inflammation, with compression of the spinal cord, posterior rib resection resulted in adequate drainage of the mediastinal abscess and prompt relief of the compression and permitted healing of the osteomyelitis. In a case of this kind, a mediastinal approach is preferable to a laminectomy as a method of drainage.

1. Schwarz, E.: Ein Beitrag zur Frage der Osteomyelitis der Wirbelsäule mit Beteiligung des Rückenmarks, *Beitr. z. klin. Chir.* 110:151, 1920.

2. Hunt, M. Rec. 65:641, 1904.

3. Browder, E. J., and Meyers, R.: *Am. J. Surg.* 37:4 (July) 1957.

ALLERGY TO ORAL ADMINISTRATION OF LIVER
CONCENTRATE

JOSEPH W. GARDNER, M.D., GLASGOW, MO.

In a recent issue of THE JOURNAL Cripp¹ recorded an instance of allergy to the injection of liver extract. I have recently observed a similar instance of allergic reaction to liver concentrates administered orally, which allergy had not been acquired from the previous administration of liver, and the reaction was accompanied by uterine bleeding. I have been unable to find any record of a similar instance; therefore, the following case would seem worthy of being recorded:

REPORT OF CASE

Mrs. L. W., a white woman aged 32, gave a history of regular menstruation every twenty-one days since the age of 12. Her periods had been interrupted only by two pregnancies, once in 1933 and again in 1936. She gave a history of allergic reaction to strawberries and any product containing sodium bicarbonate of any appreciable amount. She also suffered from ragweed hay fever in season.

Jan. 19, 1937, curettement and perineal and cervical repair were done for injuries received during labor in 1933. Physical examination was essentially negative except for lack of free hydrochloric acid in the stomach, which finding was associated with sporadic attacks of diarrhea that were controlled by taking diluted hydrochloric acid with her meals. The patient had an uneventful recovery from her operation and a month later consulted me because of weakness and a tired feeling. The red blood cell count was 4,000,000 and hemoglobin 80 per cent. Hence she was given lextron,² two capsules three times a day. Immediately after the administration of this liver concentrate she complained of severe weakness, dizziness and palpitation and was forced to go to bed. The following day she began to menstruate very profusely, and it was necessary to give her fluidextract of ergot, 1 drachm (4 cc.) every three hours; and elevate the foot of the bed to control the bleeding. She inquired at that time whether she was taking liver and stated that she had had a spell similar to the present one following the administration of jeculin,³ after the delivery of her first child, and that she continued to flow heavily until the jeculin was discontinued. I immediately discontinued the lextron and two days later the patient was able to get out of bed but was still weak and dizzy. May 4 I decided to find out whether her symptoms were coincidental or were an allergic response to the administration of the liver concentrate. During the months of March and April she had been quite regular in her periods. Thus, on the 4th of May she was given one capsule of lextron. The following day two capsules were given and she became weak and dizzy and complained of palpitation. The next day, after the administration of two more capsules of lextron, bleeding began with cramps, and the next day the uterine hemorrhage was very striking. Medication was discontinued but she continued to flow for two more days. May 12, regular menstruation began, lasting two days and requiring two pads daily. She had no bleeding then until the 16th, when she was given two capsules of extralin with a recurrence of all her symptoms and some spotting. Medication was discontinued and she had a normal menstrual period on May 31. On June 9 she was again given two capsules of extralin with the same symptoms as on the previous occasion. Since that time she has been given no more liver concentrate and her periods have been quite regular. After discontinuing the liver, the patient was given iron and ammonium citrate and numerous other iron preparations in capsule, tablet and liquid form and she suffered no untoward manifestations. None of the liver extracts were administered intramuscularly or intravenously.

I concluded that, since extralin contains liver-stomach concentrate, lextron contains in addition iron and ammonium citrate and extralin contains vitamins B₁ and G and liver-stomach

concentrate, and jeculin contains red bone marrow in addition to the ingredients of lextron but no stomach, the only ingredient common to the three products, each of which produced the allergic manifestations, was the liver extract, and the iron preparations were ruled out by trial.

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Special Article

HOSPITAL AIR CONDITIONING

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Medical research and hospital experience in the past ten years have indicated the value of air conditioning as an aid in certain therapeutic procedures. The experience of nearly fifty institutions using air conditioning in one or more wards has been reviewed in a recent report¹ of the American Hospital Association.

In the present paper are outlined the objectives and special problems arising in the control of ward atmospheres, with special reference to operating rooms, post-operative wards, nurseries for premature infants, fever cabinets or rooms, allergen-free rooms and oxygen chambers, where air conditioning has proved of value.

AIR CONDITIONING OPERATING AND POST-
OPERATIVE ROOMS

The main objectives in air conditioning operating rooms are to reduce the risk of explosion of certain anesthetic gases and to protect the patient and operating personnel against extremes of heat or cold in summer or winter.

Explosion Hazard.—Ether and ethylene in themselves are not explosive, but they become explosive when mixed with air or oxygen in certain proportions.

TABLE 1.—Approximate Limits of Inflammability of Ethylene and of Ether
(After Coward and Jones,² Courtesy, U. S. Department of Commerce)

	Lower Limit %	Upper Limit %
Ethylene in air.....	3.0	30±
Ethylene in oxygen.....	3.0	80±
Ether in air.....	1.7	6 to 50
Ether in oxygen.....	1.7	40±
Ether in nitrous oxide.....	3.8	26±

In table 1 are shown the limits of inflammability of these two common anesthetics. Although the lower limits are fairly definite, the upper limits may vary considerably, depending on a number of factors.³

It is evident from table 1 that the most critical period is during the "washing out" process at the end of the operation, when the concentration is diluted to the explosion range. The most serious cause of accidents is static sparks in dry atmospheres,³ a factor that cannot be entirely eliminated by grounding the anesthesia apparatus because it is difficult to make the rubber parts conductive to electricity. By means of an

This is the fifth report of the committee established by the American Medical Association to study air conditioning. The committee includes Carey P. McCord, Detroit, chairman; Emery R. Hayhurst, Columbus, Ohio; William F. Petersen, Chicago; Horatio B. Williams, New York, and Constantin P. Yaglou, Boston.

1. Report of the Committee on Air Conditioning, American Hospital Association, Chicago, 1936.

2. Coward, H. F., and Jones, G. W.: Limits of Inflammability of Gases and Vapors, Bull. 279, U. S. Dept. Commerce, Washington, D. C., 1931.

3. Henderson, Yandell: The Hazard of Explosion of Anesthetics: Report of the Committee on Anesthesia, J. A. M. A. 94:1491 (May 10) 1930.

1. Cripp, L. H.: Allergy to Liver Extract, J. A. M. A. 110:506 (Feb. 12) 1938.

2. Lextron is manufactured by Eli Lilly & Co.

3. Jeculin is manufactured by the Upjohn Company.

electroscope, Herb⁴ has shown that grounding affects but a small section of the rubber and that segments an inch or two away retain their charge. The same probably holds true for woolen blankets and clothing.

The measures recommended by the Committee on Anesthesia Accidents of the American Medical Association⁵ are humidifying the air to 55 per cent relative humidity, grounding the operating table and apparatus and making the floor conductive to earth by the use of a large sheet of metal, so that everything, including the personnel, is kept grounded at all times. In new buildings "terrazzo" floors with grounded brass strips are often installed for this purpose.

Explosion may also result from a combination of oxygen with oil and grease and from several other circumstances which need not be gone into here. A high humidity in winter is advantageous not only from the standpoint of explosion but also from the beneficial effect it might have in reducing loss of fluid from exposed viscera and from the wet skin of the patient, and by permitting a lower room temperature. Humidifying apparatus and controls require constant supervision to guard against drops of humidity which might prove serious.

Desirable Air Conditions in Operating and Postoperative Rooms.—It has long been known that patients under the influence of anesthesia lose ability to regulate their own body temperature, but we still do not know much about the optimum range of air conditions that will keep the body temperature normal and in this way reduce the possibility of shock and some other postoperative complications.

Barbour and Bourne⁶ found that for etherized fasting dogs the optimum temperature was about 88 F. Below 88 the body temperature fell and the blood solids increased, while above 88 the body temperature rose gradually. Administration of fluids in sufficient amounts to offset the concentration of blood induced by ether lowered the body temperature, and an air temperature of about 91.5 F. was required to maintain at normal both body temperature and blood fluids. Humidity made little difference. Such high temperatures are unbearable for the operating personnel, and a compromise is often made by keeping the room between 72 and 80 F. in cold weather with the patient carefully protected with blankets and hot water bags during and for some time after the operation.

Postoperative Heat Stroke.—Postoperative complications are probably as serious with overheating as with underheating. About twenty-five years ago, Moschcowitz⁷ discovered that deaths after surgical operations were greater during summer heat waves than in cool weather and that in a number of cases the symptoms were identical with those of heat stroke. Since then, numerous other cases have been described in the literature by Botteselle,⁸ Walton,⁹ Martin,¹⁰ Everett and Whitham¹¹ and others. Patients apparently convalesc-

ing satisfactorily from operations suddenly became prostrated in hot weather with symptoms that were typical of heat stroke. In a number of instances, the heat stroke was verified at necropsy. Dehydration from excessive loss of water and blood is believed to have been an important factor in the production of heat stroke in many cases. Collier and Maddock¹² attempted to reduce excessive water loss by lowering the room temperature and by removing blankets from the patient, but these measures had no effect.

Cooling of operating and convalescent rooms in warm weather not only protects against heat stroke during the crucial period of recovery but also improves the recuperating power of the patient as well as the comfort and efficiency of the surgical staff. In warm weather the comfortable air conditions for the operators do not differ much from those of the patient, and a compromise is, as a rule, not difficult. With a relative humidity of about 55 per cent, a temperature of about 80 will probably prove acceptable. Additional heat may be applied to the patient locally or by suitable covering, according to body temperature in individual cases. In convalescent rooms the temperature may be lowered gradually to approach the normal ward temperature, and the humidity is relatively unimportant.

Air Conditioning Equipment.—Central station plants and individual room air conditioners have proved satisfactory in operating and postoperative rooms, furnishing between six and fifteen air changes per hour of filtered and suitably humidified air, with provision for cooling and removal of excess moisture in warm summer weather. The chief disadvantage of room conditioners is their noise. Recirculation of air is not used extensively in operating rooms partly because of odors and partly because of the more expensive spark-proof equipment necessary.

A high airflow in operating rooms is desirable for three reasons: (a) to reduce anesthetic concentration below the physiologic threshold in the vicinity of the operating team, (b) to remove excessive amounts of heat given off from sterilizing equipment if inside the operating room from the powerful surgical lights, from solar radiation on walls and glass and from the bodies of the operators and (c) to allow extra capacity for quick preparation for emergency operations. A separate exhaust system is often desirable in order to remove gases and odors at the source. Good insulation of sterilizing equipment and thorough exhaust ventilation of sterilizing rooms adjoining operating rooms will help in reducing considerably the capacity and running cost of the cooling equipment.

Sterilization of Air.—An important recent development is the sterilization of air of operating rooms and contagious wards by the use of ultraviolet lights.¹³ Hart¹⁴ believes that many operating room infections are air borne and that the hazard may be materially reduced by direct ultraviolet radiation over the operating table, with the operators protected from radiation by means of suitable gowns, masks, gloves and goggles. In about fifty operations with large incisions there have been no infected wounds, healing was more rapid, there was little rise in temperature, and postoperative pains were less severe.

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6. Barbour, H. G., and Bourne, Wesley: Heat Regulation and Water Exchange: The Influence of Ether in Dogs, Am. J. Physiol. 67: 399 (Jan.) 1924.

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8. Botteselle, R.: Postoperative Heatstroke, Policlinico 30: 352 (July 15) 1923; abstr. J. A. M. A. 81: 1321 (Oct. 13) 1923.

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AIR CONDITIONING NURSERIES FOR PRE-MATURE INFANTS

It has long been known that one of the most important requirements in the care of premature infants is the stabilization of body temperature, because their heat-regulatory mechanism is not fully developed. The usual means for controlling the body temperature are heated beds, electric incubators, hot water pads, and the like, but most of these have not entirely fulfilled the environmental needs of premature infants, owing to limited air space, inadequate ventilation, insufficient humidification in winter, and failure to provide for cooling and dehumidification in warm summer weather.

Optimum Air Conditions.—The effects of air conditions on the growth and development of premature infants have been studied in three air-conditioned nurseries at the Infants Hospital of Boston.¹⁵ Four criteria were used in establishing optimum conditions; viz., stability of body temperature, incidence and severity of digestive syndromes, gain in weight and mortality rate. Wide variations were found in the requirements for air temperature (from 75 to 100 F.) according to general constitution and body weight. The optimum relative humidity was placed at 65 per cent. The requirements in all cases consisted in providing (a) the lowest temperature that would stabilize body temperature, (b) a relative humidity of 65 per cent and (c) a ventilation rate between fifteen and twenty-five air changes per hour to maintain uniform temperature and humidity in extremes of weather and to eliminate objectionable odors which ordinarily are detected when one enters such nurseries.

Significant departures from these optimum air conditions exerted demonstrable harmful effects in these extremely sensitive reactors. When relative humidities between 25 and 50 per cent prevailed for two weeks or longer, the body temperature became unstable irrespective of air temperature, the incidence and severity of digestive syndromes increased, gains in weight diminished, and the mortality rose. On the other hand, air conditions with from 55 to 65 per cent relative humidity proved satisfactory over a period of years.

In table 2 are summarized the results of this study, including data obtained in the old nurseries prior to the installation of air-conditioning apparatus and in the conditioned nurseries with high and low humidities. All data shown are weighted averages and include all infants. Actually, the smallest infants benefited most by high humidities and the biggest least (see original report¹⁵). The benefits are attributed not only to improved air conditions but also to advances in medical and nursing care.

Suitable Methods for Air Conditioning Nurseries.—Most of the air-conditioning installations now in use for nurseries are of the central station type, providing for humidification and heating in cold weather and for cooling and dehumidification in warm weather with filtration and ventilation at all times.¹⁶ Compact unit air conditioners are available at reasonable cost for installation inside, or preferably outside, the nursery, owing to noise. There are also available now completely air-conditioned incubators, the merits of which remain to be tested. Recirculation is seldom used in these

wards, owing to odors and the possibility of cross infection. Improvements of methods for sterilizing air may permit partial recirculation with a significant reduction of initial and operating costs.

A single nursery conditioned to 77 F. temperature and 65 per cent relative humidity would fulfil the requirements of the majority of premature infants. Additional heat for weak infants may be furnished in the cribs, or by means of electric incubators placed inside the conditioned nursery, and the heat adjusted according to individual requirements. In this way the necessity for multiplicity of rooms and of air-conditioning units is obviated; the infants in the heated beds derive the benefit of breathing cool humid air, and the nurses and doctors need not expose themselves to extreme conditions.

AIR CONDITIONING IN ALLERGIC DISORDERS

Usefulness and Limitations.—The use of pollen-free air for relieving symptoms of hay fever and pollen asthma is credited to Storm Van Leeuwen.¹⁷ He obtained pure air from the top of a shaft 30 meters

TABLE 2.—Effects of Air Conditions on Premature Infants: General Summary of Results

Infants Hospital, Boston
(Courtesy American Journal of Diseases of Children)

Criterion	Unconditioned Nurseries 1923-1925 Natural Humidity	Conditioned Nurseries 1926-1929 Relative Humidity	
		25-49%	50-75%
Initial loss of body weight in percentage of birth weight.....	12.4	8.9	6.0
Days to regain birth weight.....	26.5	19.5	15.1
Mean maximum diurnal fluctuation of body temperature, degrees F.			
(a) Body weights 1.5-2.5 pounds...	6.3	4.3	3.6
(b) Body weights 4-5 pounds.....	3.4	2.2	2.2
Incidence of digestive syndromes, percentage	21.1	22.9	11.6
Severity of digestive syndromes, percentage *	17.1	18.3	8.4
Weekly gains in weight in percentage of body weight.....	5.6	5.4	11.0
Net death rate, percentage †			
(a) Acute and chronic infections...	26.5	9.7	0.0
(b) All causes.....	28.9	14.5	0.7

* Evaluated by the incidence and duration of syndrome in infant-weeks.

† Excluding cases with multiple congenital anomalies incompatible with life and also death occurring within forty-eight hours after admission to the hospital.

high; he then cooled the air to -5°C . in order to condense out microdroplets and finally reheated it to a comfortable temperature in a specially constructed room where patients were exposed.

In the past ten years, various kinds of filters have been tried with results that are comparable to those secured by desensitization treatment, so long as the patients remained in a pollen-free atmosphere.¹⁸ Filtration and other air-conditioning methods will never replace medical treatment, because they are not preventive but give only temporary relief; the symptoms recur on exposure to pollen-laden air. Moreover, only extrinsic forms of allergy are benefited by air conditioning. Patients with bacterial asthma may not respond at all and the symptoms may even be aggravated by air conditioning.

Despite these limitations, air-conditioning methods have definite advantages in the simplicity and con-

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venience of treatment. Hay fever patients are usually relieved of most of their symptoms within an hour's exposure to filtered air.¹⁹ Relief to patients with pollen asthma comes slower, depending on the severity of symptoms.²⁰

A pollen-free atmosphere is especially valuable when medical methods are not entirely successful or when desensitization is not advisable owing to concurrent illness. It offers a good means for diagnosing sensitivity, as the failure of the asthmatic to obtain relief in such a room would exclude pollens as the cause.²¹

Nonseasonal asthma is sometimes attributed to sensitization to house or street dust,²² odors and irritating gases²³ or to any stimulus capable of exciting the vagus system of allergic individuals to activity.²⁴

Suitable Air Conditions.—Although the chief remedial factor in the treatment by conditioned air appears to be filtration of pollens, there is considerable evidence that heat or cold, direct drafts, and particularly sudden temperature changes are important in initiating or aggravating asthmatic attacks.²⁵ It is often stated in the literature that heat regulation in asthmatic individuals is likely to be unstable, with a tendency to hypothermia. Humidity may benefit a few²⁶ but aggravates the condition in the majority of cases.²⁷

In the experience of Rappaport, Nelson and Welker,²⁸ temperatures between 76 and 82 F. in warm weather with relative humidities about 30 per cent were found more comfortable to patients than lower temperatures with high humidities. Still uninvestigated is the connection between thunderstorms and attacks of pollen asthma in symptom-free patients who lived in a pollen-free and comfortable atmosphere. Changes of barometric pressure or ionization are suspected but not as yet proved.²⁹

Methods of Filtering Pollens from the Air.—Paper and cloth filters of suitable area proved quite satisfactory in removing all but traces of pollens (from 95 to 99 per cent). Allergens may also be removed by electro-

static precipitation³⁰ and by passing the air through a suitable water spray, or over cooling coils kept at a temperature low enough to cause precipitation of nuclei on the surface of the coils.

Inexpensive filter units are now available for home or office use, with or without cooling. In the simplest type, which fits in the window like an extension screen, outdoor air is drawn in by means of a small fan and passed through a fine cloth filter before diffusing into the room. All other windows in the room are kept shut. There are also masks which fit tightly over the nose and mouth and in this way remove pollens from the inspired air. For best results, some method of cooling and dehumidification is desirable in warm weather.

AIR CONDITIONING IN FEVER THERAPY

The therapeutic possibilities of artificial fever have been reviewed recently by Hench,³¹ Desjardins,³²



Fig. 1.—The Kettering hypertherm (Courtesy Walter M. Simpson, M.D., Miami Valley Hospital, Dayton, Ohio).

Metz,³³ Bierman³⁴ and others. Many diseases have been treated, in the past four years, with various degrees of success. The greatest field appears to be in the treatment of acute and chronic gonorrhea, since the specific pathogenic organisms involved can be killed by heat³⁵ within the limits of tolerance of man (from 105 to 107 F.). Lately, fever therapy has appeared to be of value in the management of painful neuritic states in

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which heretofore no single procedure has given satisfactory relief. Bennett and Cash³⁵ present extensive clinical evidence on the relief of painful neuritic meningitic and radicular states with systemic fever at 103-105 F. in treatments of two to three hours each, from two to six treatments altogether.

Since 1918, when Wagner von Jauregg introduced malaria therapy as a means of producing artificial fever, various other methods have been tried, including injection of vaccines, colloid or crystalloid substances, and various physical means, such as hot baths, radiant heat, diathermy, radiotherapy, heat blankets and air-conditioned cabinets. The relative advantages and limitations of these methods were recently discussed by Doub³⁶ and by Desjardins, Stuhler and Popp.³¹ Although comparable results may be obtained with most of these methods, the air-conditioned cabinets are believed to offer a safer and more effective means, by permitting more accurate control of temperature and by reducing the hazards inherent to certain other methods. Some workers have secured better results by combining systemic fever with chemotherapy or with additional local heating by diathermy or other means than by the use of heat cabinets alone.

Simpson³⁷ described the first practical heat cabinet for hospital use, known as the "Kettering hypertherm." Briefly, it consists of an insulated cabinet about 6 feet long, 3 feet wide and 2½ feet high, equipped with electric heating and humidifying apparatus. Hot air at from 130 to 150 F. and from 30 to 50 per cent relative humidity is circulated to the patient's compartment at the rate of 425 cubic feet per minute by means of a centrifugal fan. The temperature and humidity are automatically controlled by the setting of a knob and their values are indicated conspicuously on large dials with warning pilot lights on the front end of the cabinet. The nude patient lies on an air mattress with his head protruding outside the front end of the cabinet through a rubber collar (fig. 1). Any degree of fever can be induced quickly or slowly and maintained as long as desired according to individual requirements. Simpson finds that the body temperature rises to 105 F. in forty to sixty minutes. Water and chlorides lost in the sweat are replaced by mouth during the treatment.

In the past three years, several heat cabinets have appeared with some improvements. Probably the most important improvement is the substitution for hot dry air of nearly saturated air at a comparatively low temperature. In this way burns of the skin are eliminated, the loss of water and chloride may be less,³⁸ and the room in which the hypertherm is located is not heated as much as when hot dry air is used.

It can be seen in figure 2 that with a relative humidity of 30 per cent it would take too long to raise the body temperature 6 degrees F. (from 99 to 105) without resorting to excessively high air temperatures. With 60 per cent relative humidity and air movement of 400 feet per minute over the body, a temperature of about 120 F. will raise the body temperature 6 degrees in one hour, whereas with saturated air the cabinet temperature need only be from 106 to 107 F. These values will vary in different individuals and in different diseases.

Few data are available on the combinations of temperature and humidity required to maintain the body at various fever temperatures after initial heating. With saturated air a temperature of about 100 F. appears to be sufficient to keep the body at 105.

Extensive work in fever therapy is continuing on a wide variety of pathologic conditions. While this form of therapy is rapidly gaining wide recognition, its application, according to the American Medical Association, "should remain strictly a hospital procedure surrounded with the safeguards commonly employed in a major operation and under the direction of skilled physicians." The dangers associated with fever therapy were disclosed in recent papers by Kopp and Solomon,³⁹ Hartman⁴⁰ and others.

AIR CONDITIONING IN OXYGEN THERAPY

Excellent reviews of the underlying physiologic principles of oxygen therapy and its value in various diseases have been written recently by Boothby,⁴¹ Potts⁴² and Barach.⁴³

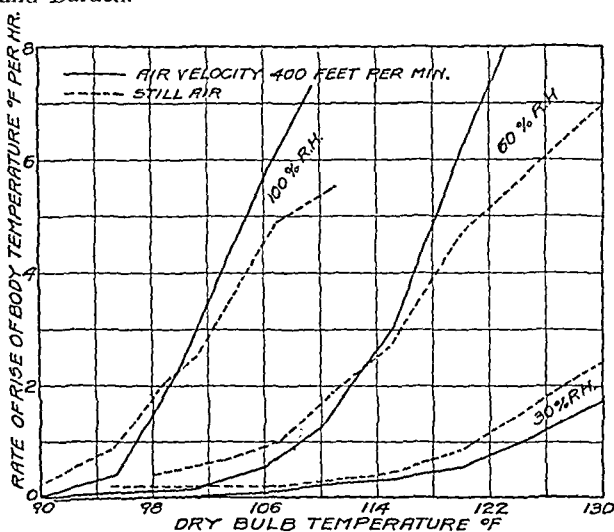


Fig. 2.—Rise of body temperature (rectal) in a group of normal men after one hour's exposure in an air-conditioned room (after McConnell, W. J., and Yaglou, C. P.: Air Motion, High Temperatures and Various Humidities: Reaction on Human Beings, Tr. Am. Soc. Heating and Ventilating Engineers 30: 167, 1924; courtesy American Society of Heating and Ventilating Engineers).

Oxygen Tents.—In oxygen tents, or chambers, air conditioning is concerned with the conservation of expensive oxygen gas by removal of excessive heat, moisture and carbon dioxide, in a closed space in which there is no outside air supply other than that from leakage.

In tents, the cooling medium is usually ice. A small motor blower circulates the air over soda lime to remove carbon dioxide and then over ice for cooling and dehydration. The concentration of oxygen is regulated by means of a pressure-reducing valve and flowmeter. The usual rate of flow is from 5 to 10 liters per minute in tight tents, and the usual oxygen concentration is

35. Bennett, A. E., and Cash, P. T.: Relief of Neuritic Pain by Artificial Fever Therapy, *Arch. Phys. Therapy* 19: 69 (Feb.) 1938.

36. Doub, H. P.: Artificial Fever as a Therapeutic Agent, *Radiology* 25: 360 (Sept.) 1935.

37. Simpson, W. M.: Artificial Fever Therapy of Syphilis, *J. A. M. A.* 105: 2132 (Dec. 28) 1935.

38. Lee, D. H. K., and Mulder, A. G.: Some Immediate Effects of Reduced Cooling Powers upon the Water Balance and Related Effects in the Human Subject, *J. Physiol.* 84: 410 (July 24) 1935.

39. Kopp, Israel, and Solomon, H. C.: Shock Syndrome in Therapeutic Hyperpyrexia, *Arch. Int. Med.* 60: 597 (Oct.) 1937.

40. Hartman, F. W., and Major, R. C.: Pathological Changes Resulting from Accurately Controlled Artificial Fever, *Am. J. Clin. Path.* 5: 392 (Sept.) 1935. Hartman, F. W.: Lesions of the Brain Following Fever Therapy: Etiology and Pathogenesis, *J. A. M. A.* 100: 2116 (Dec. 25) 1937.

41. Boothby, W. M.: Oxygen Therapy, *J. A. M. A.* 99: 2026 (Dec. 10), 2106 (Dec. 17) 1932.

42. Potts, W. H., Jr.: Oxygen Therapy: A Critical Résumé, *Am. J. M. Sc.* 184: 616 (Nov.) 1932.

43. Barach, A. L.: Recent Advances in Inhalation Therapy in the Treatment of Cardiac and Respiratory Disease, *New York State J. Med.* 37: 1095 (June 15) 1937.

50 per cent or less. Temperatures down to 75 F. and humidities between 40 and 50 per cent are approximately the limits of the equipment in warm weather.

Oxygen Chambers.—Oxygen chambers were introduced by Barcroft, Hunt and Dufton⁴⁴ in England and by Stadie⁴⁵ and Binger⁴⁶ in America. The conventional chamber is made of sheet steel and is large enough to accommodate one or two beds. All entrances

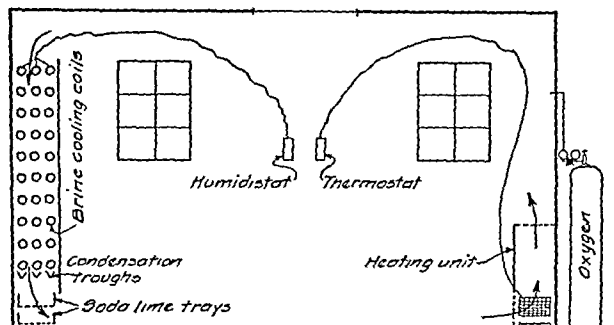


Fig. 3.—Line drawing of a conventional oxygen chamber with gravity air circulation.

are provided with trap doors to avoid loss of oxygen. Illumination comes through a glass window in the ceiling. The conditioning system is either the gravity type first used by Barach⁴⁷ or the fan type using silica gel and mechanical refrigeration. Circulation in the gravity type is induced by means of a heating coil and a cooling coil on opposite walls (fig. 3), the former regulating the temperature, and the latter the humidity with automatic controls. Soda lime at the bottom of the cooling coils removes excessive carbon dioxide. The main objections to gravity circulation are stratification of cold air near the floor and accumulation of odors.

In the fan-circulation system (fig. 4) moisture is absorbed in silica-gel beds and the air is cooled by compact finned coils through which cold brine is circulated. Spray dehumidifiers are unsuitable for this purpose because the air must be cooled often below 32 F. in order to obtain relative humidities well below 30 per cent, for the treatment of pneumonias and bronchial conditions.

The factors which determine the selection of proper temperature and humidity in oxygen therapy are primarily individual; the patient rather than the disease is given first consideration. For pneumonias, Bullowa⁴⁸ and Barach⁴⁹ place the desirable temperature range between 60 and 75 F., with relative humidities between 20 and 50 per cent. The consensus favors as low a humidity as is consistent with economy.

Oxygen chambers are more comfortable than oxygen tents, particularly to the restless and delirious types of patients. Nursing and medical care is unhampered and oxygen concentration, temperature and humidity can be accurately controlled at any desired level.

The main disadvantage is high initial and operating costs in comparison with tents and other simpler methods. The cost may be justified in large hospitals

and for research purposes, but for routine oxygen therapy alone conventional metal chambers have proved to be a liability rather than an asset, because they are not used continuously and cannot be used for anything else.

There is no reason why an ordinary room cannot be made fireproof and reasonably airtight without expensive metal construction. In addition to pneumonias and respiratory and heart disorders, many diseases affected by heat, cold, humidity or chemical constitution can be taken care of in one or two such rooms without serious difficulties in the design of air-conditioning apparatus. The rooms can also be used as ordinary wards with or without running the conditioning apparatus, when they are not needed for special treatment.

GENERAL HOSPITAL AIR CONDITIONING

Complete conditioning of large hospitals is much too expensive in initial and operating costs to be justified on the basis of any available evidence.

In the cold season of the year, the requirements of almost all general and private wards can be satisfactorily fulfilled by rational heating in conjunction with window ventilation and gravity or mechanical exhaust. Insulation for heat and sound is very important. Excessive outside dust and noise may be controlled by the use of suitable air filters and silencers in the window openings. The preferred method of heating is by hot water with radiators under the windows extending the entire length of the window. The preferred exhaust system in large buildings consists of one or more fans installed in the attic or in a penthouse on the roof. One or more vertical shafts connect the fan or fans with trunk ducts on the ceiling of each floor, and the exhaust openings in individual rooms communicate with these trunk ducts.

Cooling in warm weather deserves serious consideration, particularly in the South and Middle West. High cost precludes cooling the entire hospital, but the needs

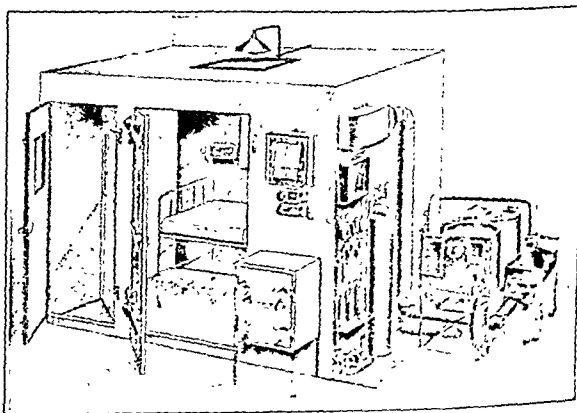


Fig. 4.—A one-patient oxygen chamber of the fan-circulation type, using silica gel for dehydration (courtesy Silica Gel Corporation).

of the average hospital may be satisfactorily fulfilled by the use of built-in room coolers in certain sections of the hospital and a few portable units which can be wheeled from ward to ward when needed. In the past few years, these units have been improved so that they are now less noisy, easier to move and less costly. From the standpoint of noise and cost there are definite advantages in multiple built-in units furnished with refrigerant from one or more central compressors in the basement.

44. Barcroft, J.; Hunt, G. H., and Dufton, D.: Treatment of Gas Poisoning by Continuous Oxygen Administration in Chambers, *Quart. J. Med.* 13: 179 (Jan.) 1920.

45. Stadie, W. C.: Construction of an Oxygen Chamber for the Treatment of Pneumonia, *J. Exper. Med.* 35: 323 (March) 1922.

46. Binger, C. A. L.: Construction and Management of an Oxygen Chamber, *Mod. Hosp.* 24: 186 (Feb.) 1925.

47. Barach, A. L.: New Oxygen Chamber Ventilated by Thermal Circulation of Air, *Mod. Hosp.* 32: 144 (Jan.) 1929.

48. Bullowa, J. G. M.: General Measures Employed in the Treatment of the Pneumonias, *Health Examiner* 5: 12, 1936.

49. Barach, A. L.: A New Type of Oxygen Chamber, *J. Clin. Investigation* 2: 463 (Aug. 20) 1926.

Cooling in warm weather is of great value in maternity and delivery rooms, children's wards, x-ray rooms, and in the treatment of fevers, heat stroke, heart failure, enteric disorders and a number of other ailments that accompany summer heat waves.

A more thorough description of air-conditioning apparatus for hospitals, including initial and operating costs, is given in a Report of the American Hospital Association.⁵⁰

The operation of hospital air-conditioning plants is as important as the installation. Unless they are kept clean and are serviced periodically by competent engineers, they will not prove satisfactory in the hands of inexperienced hospital engineers.

55 Shattuck Street.

Council on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED.

FRANKLIN C. BING, Secretary.

SWISS BRAND EVAPORATED MILK

Manufacturer.—Ewing-Von Allmen Dairy Company, Louisville, Ky.

Description.—Canned, unsweetened, evaporated milk.

Manufacture.—Carefully selected milk is collected, shipped to the main plant in insulated tank trucks, pumped into storage tanks, cooled to 40 degrees, preheated, and held at 95 to 99 C. for thirty minutes. The milk is partially evaporated under vacuum, homogenized, standardized, cooled, filled into cans and sterilized.

Analysis (submitted by manufacturer).—Moisture 74.1%, total solids 25.9%, ash 1.5%, fat (ether extract) 7.9%, protein (N × 6.38) 7.3%, lactose (by difference) 9.2%.

Calories.—1.4 per gram; 40 per ounce.

DROMEDARY BAKED APPLES

Manufacturer.—Hills Brothers Company, New York.

Description.—Canned baked apples packed in syrup of granulated cane sugar, water and honey.

Manufacture.—Carefully selected and graded York Imperial apples are cored and the skin punctured by machine, again inspected and any remaining core, seeds and blemishes removed. The apples are washed, baked for forty-five minutes, placed in individual waxed paper cups, packed in tins, covered with hot syrup, sealed, processed and cooled.

Analysis (submitted by manufacturer).—Moisture 67.1%, total solids 32.9%, ash 0.3%, fat (ether extract) 0.4%, protein (N × 6.25) 0.7%, crude fiber 0.7%, carbohydrates other than crude fiber (by difference) 30.8%, sucrose 2.4%, reducing sugars as dextrose 28.8%.

Calories.—1.3 per gram; 37 per ounce.

NUTRADIET BRAND WHOLE RED BEETS PACKED IN WATER

Distributor.—The Nutradiet Company, a subsidiary of S & W Fine Foods, Inc., San Francisco.

Description.—Canned whole beets, packed in water without added sugar or salt.

Manufacture.—Properly matured Detroit Dark Red Beets are graded and stored for one to three days to set the color, are

inspected and hand topped, blanched, mechanically peeled in a stream of water, graded and packed by hand in enamel-lined tins. Boiling water is added and the containers are exhausted, sealed and processed.

Analysis (submitted by manufacturer).—Moisture 81.7%, total solids 18.3%, ash 0.5%, fat (ether extract) 0.1%, protein (N × 6.25) 0.7%, crude fiber 0.5%, carbohydrates other than crude fiber (by difference) 16.5%.

Calories.—0.70 per gram; 20 per ounce.

Claims of Manufacturer.—For use in special diets in which sugar or salt is proscribed or in quantitative diets of calculated composition.

ANDERSON'S WHEAT GERM

Distributor.—Mrs. Catherine S. Anderson, Grosse Pointe, Mich.

Manufacturer.—Pillsbury Flour Mills Company, Minneapolis.

Description.—Wheat embryo as obtained from the milling of hard wheat.

Manufacture.—Select hard red spring and hard red winter wheat are cleaned, scoured, tempered and milled by essentially the same procedure as described in THE JOURNAL, June 18, 1932, page 2210. The germ is separated from the first break middlings, flaked on suitable rolls, freed from impurities on a special sifter and packed by hand. The Pillsbury Laboratory reports that the finished product is composed of about 85 per cent germ, 10 per cent bran and 5 per cent endosperm.

Analysis (submitted by manufacturer).—Moisture 6.0%, total solids 94.0%, ash 4.5%, fat (ether extract) 12.3%, protein (N × 5.7) 30.6%, sucrose 16.3%, reducing sugar as dextrose 1.2%, crude fiber 2.5%, carbohydrates other than crude fiber (by difference) 44.1%.

Calories.—4.1 per gram; 116 per ounce.

Vitamins.—Reports of assays show 3,600 International units (4,788 Sherman units) of vitamin B₁ per pound and 1,816 Bourquin-Sherman units of vitamin G per pound.

LARSEN'S BRAND STRAINED APPLES AND APRICOTS

Manufacturer.—The Larsen Company, Green Bay, Wis.

Description.—Canned, sieved apples and apricots.

Manufacture.—Selected fresh apples are cored, chopped and combined with canned fresh apricots, mixed, softened, double screened under vacuum, and filled into cans which are sealed in vacuum and processed for sixty minutes at 212 F.

Analysis (submitted by manufacturer).—Moisture 81.7%, total solids 18.3%, ash 0.6%, fat (ether extract) 0.2%, protein (N × 6.25) 0.8%, crude fiber 0.7%, carbohydrates other than crude fiber (by difference) 16.0%, calcium (Ca) 0.013%, phosphorus (P) 0.055%, iron (Fe) 0.0012%, ratio calcium/phosphorus 0.24%, ratio carbohydrates/protein 20%.

Calories.—0.7 per gram; 20 per ounce.

MRS. PALEY'S BABY FOOD— STRAINED APRICOTS

Manufacturer.—Paley-Sachs Food Company, Houston, Texas.

Description.—Cooked, sieved, sulfured dried apricots, packed with added dextrose.

Manufacture.—Dried, sulfured apricots are washed, soaked for twelve hours, pressure cooked with added dextrose, sieved, filled into glass jars, vacuum sealed and heat processed.

Analysis (submitted by manufacturer).—Moisture 70.4%, total solids 29.6%, ash 1.1%, fat (ether extract) 0.1%, protein (N × 6.25) 1.1%, reducing sugars as dextrose 10.3%, sucrose 10.8%, crude fiber 0.9%, total carbohydrates other than crude fiber (by difference) 26.4%, calcium (Ca) 0.024%, phosphorus (P) 0.048%, iron (Fe) 0.0023%, sulfur dioxide (SO₂) 0.0211%.

Calories.—1.1 per gram; 31 per ounce.

50. Report of the Committee on Air Conditioning, Bull. 119, Am. Hosp. A., 1934.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JUNE 11, 1938

THE LYMPHATIC SYSTEM

In his Harvey lecture, last year, C. K. Drinker¹ of the Harvard School of Public Health reviewed our knowledge of the functional significance of the lymphatic system. Of all mammals man can probably claim the most extensive and elaborate lymphatic apparatus. One of the principal functions of this system is defense against inflammatory processes, but this is not the whole story. The study of lymphatic function under normal conditions has already yielded information of additional import. The lymphatics are a simple subsidiary circulatory mechanism and are steadily engaged in moving fluid which leaves the blood capillaries and returns again to the blood. In a series of experiments begun in 1930 in Professor Krogh's laboratory, lymph was collected from different regions in the dog. The most dependable figure on the amounts of lymph collectable per minute (exclusive of the thoracic duct and abdominal vessels) were obtained by cannulating the lymph in the foreleg of a dog under local anesthesia. Fluid equal to fifty times the total blood plasma may leave the capillaries and pass through the lymphatic system in twenty-four hours. Furthermore, it was found from analysis of the chemical and physical properties that lymph is essentially a reflection of the composition of the blood plasma after allowance for dilution. In the light of modern experiment, therefore, it appears that in mammals such blood proteins as leave the capillaries to enter the tissue fluid are removed by the lymphatics. Under normal circumstances this function is called into play by such factors as changes in position, movement and tissue pressure. The composition of lymph is due to the filtration of products from the blood and not, as has been suggested, to the universal production of this fluid in the tissues.

Further information on the functions of this system was obtained by Drinker and his co-workers in a series of ingenious experiments begun in 1932. These were based on the ablation of lymphatic function in a part.

The conclusions as to what is normal were dependent on what failed to happen when such lymphatics were rendered functionless. Repeated centrally directed injections of a suspension of finely divided crystalline silica in 2.5 per cent quinine hydrochloride were used. In this mixture the quinine caused a painless necrosis of the tissues and the silica induced progressive fibrosis. In this manner lymphedema was produced, followed by fibrosis, overgrowth, typically elephantiac change and eventually epithelial proliferation in the foot pads. The second definite result was the appearance of an astonishing susceptibility to streptococcic infections. In addition to these factors, the isolated limb subject to experiment at once began to grow and the growth was wholly at the site of fluid accumulation; that is, in the skin and subcutaneous tissues. The tissue fluid gained steadily in protein until concentrations as high as 5 per cent were reached. These regions became for the first time susceptible to infection not only with the streptococcus but with other organisms as well.

Drinker believes that the lymphatic system retains its primitive position as part of the circulatory apparatus. Because the permeability of peripheral blood capillaries to protein is not quantitatively great, this function is overlooked until lymph drainage becomes important in the presence of spreading infection, edema or elephantiasis.

Lymph nodes represent a portion of the lymphatic apparatus that is particularly puzzling. They are effective filters; it is questionable whether any extravascular protein can get back to the blood vessels without going through a lymph node. Lymph flowing to a node from a number of afferent vessels reaches the marginal sinus and is there in a relatively large umbrella-shaped lake where the rate of flow becomes exceedingly slow and opportunity for settling occurs. This mechanical effect is supplemented by the biologic actions of endothelial phagocytes in the lymph node reticulum. These two effects are particularly well devised for impeding bacterial growth and spread. Therefore, even relatively huge doses of organisms entering through the afferent lymphatics escape from the node with difficulty if at all. If the infection is so overwhelming, however, that actual lymph node infection is established, the node may act as a nidus to feed organisms steadily into the lymph stream.

Another function of the nodes is to pour lymphocytes into the lymph stream, and this activity can be augmented by massage of a node.

Slowly the increasing availability of direct methods of experiment on this interesting system is adding to the sum of physiologic knowledge. The experimental methods available today indicate that this circulatory system will be slowly taken to pieces physiologically and analyzed just as has been the case with the blood circulatory system.

1. Drinker, C. K.: The Functional Significance of the Lymphatic System, *Bull. New York Acad. Med.* 14:231 (May) 1938.

COLLAPSE THERAPY FOR PULMONARY TUBERCULOSIS IN OLDER PATIENTS

Collapse therapy for pulmonary tuberculosis has become, in the last two decades, a most important measure in combating this disease. Various methods of accomplishing collapse of the lung, as well as the indications for each, have been established. With the improvement in the technic and in the results obtained, the indications have widened to include a greater number of cases. Although collapse of the lung was at first considered suitable only for unilateral cases, it is now regarded as applicable under certain conditions to bilateral cases as well.

Decker,¹ in a recent communication, raises the question of the age limit, more specifically, the question of the benefits to be gained from surgical procedures in patients past 40 years of age. He presents an analysis of a group of patients whose ages ranged between 40 and 60 years. About 25 per cent of the cases were moderately advanced and the remainder far advanced. About half of the patients had bilateral lesions. Cavities were present in 106 (69 per cent). Here was a group of patients largely incapacitated for work, dependent on their families or institutions for support, and with no other outlook than invalidism and death from the disease. They were submitted to various forms of collapse therapy. The clinical results observed for periods ranging from six months to ten years suggest that about 20 per cent of this group will ultimately be well, perhaps able to do some work, that 25 per cent will be improved, that 25 per cent will remain unimproved and will die of the disease, and that 30 per cent have already died or soon will die. A comparison with the results in the age group of 20 to 40 years, according to Decker, showed a difference of from 10 to 15 per cent in less favorable response.

The least violent of the surgical methods, namely, artificial pneumothorax, was much less satisfactory in its effects than might have been expected. The method was tried in seventy-eight cases and the treatment was continued for periods of from three months to six years. It was carried to completion in 20 per cent and was discontinued because of unsatisfactory collapse in 15 per cent and for other reasons in 35 per cent. Arrest was obtained in 16.6 per cent, improvement in 24.5 per cent, no benefit in 32 per cent and mortality in 26.9 per cent. The failure to induce a sufficient degree of collapse in these cases is due to the greater frequency of adhesive pleuritis. The most satisfactory results were obtained with phrenic nerve exeresis. Of the seventy-three operations performed, eighteen resulted in arrest and thirty-three in improvement. Fixation of the diaphragm was obtained in all. Cavities were

closed in 15 per cent. Results with thoracoplasty were anything but encouraging. Of seventeen patients submitted to thirty-four operations, eight, or 47.2 per cent, died. Among the contributing causes the author considers the lowered vitality, extensive pleural adhesions, fibrosis and emphysema in the contralateral lung, arterial sclerosis, greater tendency to postoperative nephritis and beginning degenerative changes in the myocardium.

Because of the generally hopeless outlook of this group, they should be given whatever benefit they may derive from collapse therapy. Apparently indications for thoracoplasty must be even more strictly limited rather than extended.

CIRCULATION OF BILE AND SYNTHESIS OF HEMOGLOBIN

A continuous cycle of secretion and absorption of bile from the intestinal tract is apparently necessary for normal synthesis of hemoglobin. This conclusion by Hawkins and his co-workers¹ of the Department of Pathology, University of Rochester School of Medicine, is drawn from a continuation of their studies of experimental bile fistula in dogs. By the fistulas which they establish the bile is drained into the right renal pelvis. From earlier studies they found that exclusion of bile from the intestinal tract by this technic led to several abnormalities. First was the development of general osteoporosis, often leading to spontaneous fractures. Physiologic analysis showed that this abnormality of bone was caused by lack of absorption of vitamin D from the intestinal tract. The lesion in bone could be prevented by the oral administration of bile. A second abnormality of major importance was a tendency to purpura; often leading to spontaneous bleedings. Analysis showed that this bleeding was due to lack of prothrombin in the blood plasma. Here also the lesion could be prevented by adequate feeding of bile.

In order to study the effects of bile fistula on the formation of blood pigment the Rochester pathologists combined experimental bile fistula with experimental anemia. The anemia was produced by repeated withdrawals of relatively large amounts of blood. In the anemic dogs with bile fistula the rate of hemoglobin regeneration was but about half that in their control anemic dogs with normal circulation of bile. Iron given by mouth was utilized at but half the rate of its utilization in control anemic dogs. Colloidal iron injected intravenously, however, was therapeutically effective in both groups. Apparently dogs with bile fistula are able to absorb iron from the intestinal tract at only about half the normal rate. Unlike the reduced

1. Decker, H. R.: Experience with Collapse Therapy for Pulmonary Tuberculosis in the Fifth and Sixth Decades, *J. Thoracic Surg.* 7: 351 (April) 1938.

1. Hawkins, W. R.; Robschit-Robbins, F. S., and Whipple, G. H.: *J. Exper. Med.* 67: 89 (Jan.) 1938. Hawkins, W. B., and Whipple, G. H., *ibid.* 62: 599 (Oct.) 1935. Hawkins, W. B., and Brinkhous, K. M., *ibid.* 63: 795 (June) 1936.

absorption of vitamin D, however, the rate of iron absorption could not be increased by the oral administration of bile.

The fact that dogs with bile fistula can be maintained at a normal body weight over a period of years indicates adequate absorption of protein digestive products. The failure of oral administration of bile to compensate for this reduced absorption of iron seems to suggest the existence of labile hormones or enzymes in freshly secreted bile. Perhaps this "ferrosynthesin" is destroyed or denatured by routine methods of preparation and oral administration of bile. Such a hypothetic enzyme might conceivably be necessary not only for adequate absorption of iron from the intestinal tract but after absorption as a hepatic stimulant or chemical precursor in synthesis of hemoglobin. The Rochester pathologists, however, wisely refrain from all theoretic speculations of this type and limit themselves to modest conclusions: (1) that a constant secretion and absorption of bile from the intestinal tract is necessary for a normal rate of iron metabolism, and (2) that lack of adequate bile circulation cannot be compensated for by the oral administration of bile. Iron given by mouth is only partially effective.

SCARLET FEVER QUARANTINE

From two state boards of health come announcements indicating changes in the quarantine regulations for scarlet fever. The Oregon State Board of Health¹ promulgates a modification of scarlet fever quarantine, with the statement that it "has found it necessary to require more rigid measures to prevent this disease from spreading."

At the same time the Iowa State Department of Health² announces a liberalization of quarantine to the extent of permitting the breadwinner to enter and leave a quarantined home in which there is a case of scarlet fever "provided he is not a food handler, does not come in contact with the patient or with groups of children and gives satisfactory evidence of immunity to the disease. However, if he handles dairy products or ready-to-eat foods, the breadwinner or other adult should live elsewhere while the home is placarded and not resume employment until from three to seven days after last exposure. This arrangement also applies to teachers and others who come in contact with children."

Here are two diametrically opposite actions, each taken by a state health organization of competence and experience.

The Oregon State Board of Health permits release after twenty-one days from the time when the case

has been reported, provided there are no evidences of infectiousness and provided negative cultures of the nose and throat have been obtained. According to the Iowa announcement, the minimum period of isolation is also twenty-one days, but in this case "from the day of onset of illness." As to cultures of the nose and throat, the Iowa announcement states, "in some instances it may be advisable for a public health laboratory to report on the presence or absence of the scarlet fever germ."

Since the adoption of modern methods of control of contagious disease, scarlet fever has created the most vexing problems in epidemiology which confront the physician and the public health officials. The difficulty begins with diagnosis; many atypical cases without rash or sore throat, of doubtful type, and strawberry tongues without diagnostic significance add to the difficulties of recognition. The missed and mild cases and healthy carriers are undoubtedly responsible for epidemics more than is the frank case of the disease, especially if the patient is severely ill. Once quarantine has been established, the question of termination is immediately raised. Quarantine periods have ranged all the way from a minimum of twenty-one days to a minimum of forty-two days, with twenty-eight days a common intermediate figure. The utmost difficulty is always experienced in persuading quarantined persons that the number of days is a minimum and not a maximum. In mild cases in which apparent recovery may take place as early as the seventh or tenth day, or in extremely mild cases in which the child is scarcely ill, the utmost resistance is encountered to a minimum of even twenty-one days. The culturing of throats for hemolytic streptococci is less satisfactory than culturing for diphtheroid organisms because of the difficulties inherent in distinguishing the strains of the hemolytic streptococcus, and the absence of a relatively easy virulence test to settle problems of prolonged quarantine. If the health officer liberalizes quarantine and an outbreak follows, he may erroneously be blamed for what was in no way related to the official action. If he tightens his regulations to assist in the control of a threatened outbreak, he is faced with the problem of evasions and nonreporting.

Scarlet fever has apparently grown milder, if one may judge by reported death rates. This may be a reflection of modern hospital and nursing care, of such immunization as has been done, and of the use of serum therapy in severe cases. It may, however, be due merely to a zymotic cycle. The problem of scarlet fever is far from solved. What is needed more than anything else is a laboratory technic for the quick and inexpensive diagnostic culturing of hemolytic streptococci of the scarlet fever strains, and extensive observations in the field to observe the effects of release on the basis of negative cultures.

1. Weekly Bulletin, Oregon State Board of Health 16, March 15, 1938.

2. Weekly Health Message, United States Public Health Service in Cooperation with the Iowa State Department of Health, No. 596, March 14, 1938.

Current Comment

DISTRIBUTION OF HOSPITAL SERVICE

In the United States there are only five counties with a population density of five per square mile within thirty miles of which there is no registered general hospital. As vast programs of hospital construction are being advocated,¹ certain facts regarding the present distribution of hospital facilities should be kept in mind. In 1937 there were 6,128 hospitals registered by the American Medical Association with a capacity of more than a million beds and fifty-five thousand bassinets, to which well over nine million patients were admitted during the year.² True there are 941 counties without a registered hospital, but of these, 560, or 60 per cent, lie wholly within a thirty mile radius of hospitals in adjoining territory. There remain 368 counties parts of which are within thirty miles of existing hospital facilities and, in the whole country, but thirteen counties no part of which is within thirty miles of a registered general hospital. The population of these counties is 67,800. Eight of them support less than five persons per square mile. There may be some localities in which hospital facilities are needed. However, the Commonwealth Fund, which for the past ten years has been awarding hospitals to communities which seemed to be able to maintain such institutions with proper standards, has thus far made eleven awards.

RISK IN USING ZINC SULFATE FOR PREVENTION OF POLIOMYELITIS

About one year has passed since Schultz and Gebhardt reported that 1 per cent zinc sulfate solution applied to the olfactory mucosa in monkeys affords a high degree of protection against poliomyelitis virus instilled into the nose a month later. This method of prevention has been used experimentally in many places. The risk of producing permanent loss of the sense of smell must be considered in connection with its use. Schultz and Gebhardt (page 2024, this issue), point out that several cases have occurred in which the sense of smell has not yet returned after a period of more than six months. Cases of such lasting anosmia have not been discovered in children, however, perhaps because of anatomic differences in the nose. Schultz and Gebhardt recently observed after the application of zinc sulfate to the olfactory area of monkeys a severe exudative inflammation of the olfactory mucosa, together with desquamation of epithelial cells. Caution is advised, therefore, in the further use of zinc sulfate in man until more is known about the risk of permanent anosmia and of the mechanism underlying the protection against poliomyelitis in monkeys. The full answer to this problem cannot be obtained from experimental work on animals. Physicians will be able to help investigators by transmitting to them their individual experiences.

1. The Need for a National Health Program, Report of the Technical Committee on Medical Care, Interdepartmental Committee to Coordinate Health and Welfare Activities, Washington, D. C., 1938.

2. Hospital Service in the United States, J. A. M. A. 110:959 (March 26) 1938.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Symposium on Oxygen Therapy.—The Jefferson County Medical Society sponsored a symposium on oxygen therapy at a meeting in Birmingham May 16. The speakers-included:

Allen D. Keller, Ph.D., professor of physiology and pharmacology, University of Alabama School of Medicine, Physiology of Oxygen Want.
J. I. Banash, B.S., consulting engineer, Chicago, Mechanical Considerations of Oxygen Therapy Apparatus.
Dr. James S. McLester, professor of medicine, University of Alabama School of Medicine, Clinical Response to Oxygen Therapy.

CALIFORNIA

Plague Infection in Squirrels.—According to *Public Health Reports*, plague infection has been proved by animal inoculation in one beecheyi squirrel from a ranch four miles east of Watsonville and in a pooled specimen of organs from five squirrels from a ranch six miles east of Watsonville, Santa Cruz County. These specimens were submitted to the Hooper Foundation for Medical Research, San Francisco, April 13.

Changes Among Health Officers.—Dr. Ellis D. Sox, Berkeley, has been appointed health officer of Tulare County; the unit has recently been placed on a full time basis. Dr. Elmo R. Zumwalt, Tulare, health officer of the unit under the old setup, continued on a part time basis until June 1. Dr. Elmer M. Bingham, San Luis Obispo, health officer of Yolo County, has been appointed to a similar position in San Luis Obispo County. He succeeds Dr. Allen F. Gillihan, who retired on account of ill health. Dr. John O. Rafferty, Oakland, has been appointed to succeed Dr. Elmer McK. Bingham, San Luis Obispo, as health officer of Yolo County. Dr. Seth H. Miles, Santa Monica, has been appointed health officer of Mono County, succeeding Dr. Robert K. Harker, Bridgeport.

CONNECTICUT

Society News.—The New Haven Medical Association was addressed April 20 by Dr. Arthur Krida, New York, on "Treatment of Fracture of the Hip."—At a meeting of the Yale Medical Society in New Haven May 11 the speakers were, among others, Abraham White, Ph.D., on "Chemical Studies of Anterior Pituitary Hormones" and Dr. Hebbel E. Hoff and Richard G. Horton, Ph.D., "Cortical Control of Cardiovascular Reflexes." A special meeting of the society was addressed May 18 at the Sterling Hall of Medicine by Dr. Herbert W. Wade, medical director, Leonard Wood Memorial, Culion, P. I., on "Leprosy as a World Problem." Dr. Wilder G. Penfield, Montreal, discussed "Circulatory Changes in the Epileptic Brain" before the society April 13.

Thirty Years of Mental Hygiene.—The Connecticut Society for Mental Hygiene observed its thirtieth anniversary at a two day celebration May 6-7 in New Haven. A founders' dinner commemorated the event May 5. Other features included a public jubilee celebration in the auditorium of the Law School of Yale University and an institute of mental hygiene at which sessions were conducted for social workers, public health nurses and teachers. At the public meeting the speakers were, among others, Gov. Wilbur L. Cross, Charles-Edward A. Winslow, Dr. P.H., president of the society; Dr. Clarence M. Hincks, New York, general director, National Committee for Mental Hygiene in the United States and medical director of the Canadian Committee for Mental Hygiene, and Mr. Clifford W. Beers, founder of the mental hygiene movement.

Dr. Yandell Henderson Retires.—Yandell Henderson, Ph.D., who has been associated with Yale University since 1900, will retire as director of the laboratory of applied physiology, Yale University School of Medicine, New Haven, at the end of the academic year, according to *Science*. He will be succeeded by Dr. Howard W. Haggard, associate professor of applied physiology, who also becomes professor. Dr. Henderson was born in Louisville, Ky., April 23, 1873. He received his degree of doctor of philosophy at Yale in 1898 and at the universities of Marburg and Munich in 1899 and 1900 respec-

tively. He joined the staff at Yale in 1900 as instructor in physiology, becoming professor of applied physiology in 1921. An Associate Fellow of the American Medical Association, he served as secretary of its Section on Pathology and Physiology in 1909-1910 and as chairman in 1910-1911.

DISTRICT OF COLUMBIA

Dr. Parran Awarded Mendel Medal.—Dr. Thomas Parran, surgeon general, U. S. Public Health Service, has been awarded the Mendel Medal for 1938 by Villanova (Pa.) College in recognition of his scientific approach to the problems of public health. The medal was established by the college in 1929 as a mark of recognition for the work of the outstanding Catholic scientist of the year.

New Officers of District Society.—Dr. John H. Lyons, Washington, was named president-elect of the Medical Society of the District of Columbia at its annual session May 11, and Dr. William J. Mallory, Washington, was inducted into the presidency. Vice presidents are Drs. William T. Gill Jr. and David Davis. Dr. Coursen B. Conklin, Washington, was reelected secretary. The next annual session will be held in Washington May 3-4, 1939.

Hospital News.—The Medical Society of St. Elizabeth's Hospital, Washington, held its first annual dinner at the Kennedy-Warren Hotel, April 14. Dr. Winfred Overholser, recently appointed superintendent of the hospital, and Mrs. Overholser were guests of honor. Cloyd Heck Marvin, LL.D., president, George Washington University, was the speaker. It was announced that a portrait of the late Dr. William A. White, formerly superintendent of the hospital, would probably soon be presented to the hospital.

FLORIDA

Annual Short Course for Physicians.—The sixth annual graduate short course for physicians will be held at the Osceola Hotel, Daytona Beach, June 27-July 2, under the auspices of the Florida Medical Association and the state board of health. The instructors will be:

Dr. Maurice C. Pincoffs, professor of medicine, University of Maryland School of Medicine, Baltimore.

Dr. Wilbur Emory Burnett, associate professor of surgery, Temple University Medical School, Philadelphia.

Dr. Jesse O. Arnold, professor of obstetrics at Temple.

Dr. Alexander J. Schaffer, associate in pediatrics, Johns Hopkins University School of Medicine, Baltimore.

Dr. Robert J. Crossen, assistant professor of clinical obstetrics and gynecology, Washington University School of Medicine, St. Louis.

Dr. Beverley R. Tucker, professor of neuropsychiatry, Medical College of Virginia, Richmond.

Registration will begin promptly Monday morning June 27, although any one wishing to register in advance may do so through Dr. George C. Tillman, Gainesville. A registration fee of \$5 will be charged.

IDAHO

Society News.—At a meeting of the Pocatello Medical Society in Blackfoot, April 7, Dr. James O. Cromwell, medical superintendent of the state hospital at Blackfoot, discussed "Schizophrenia and Modern Treatment with Insulin Shock Therapy." V. R. Fisher, Ph.D., also on the staff of the hospital, spoke on negativism and suggestibility in schizophrenia.

Annual Registration Due July 1.—All practitioners of medicine and surgery holding licenses to practice in Idaho are required by law to register annually on July 1 with the department of law enforcement and at that time to pay a fee of \$2. If a licentiate has not paid the annual registration fee by October 1, his license can be canceled but will be restored within five years thereafter on payment of the delinquent fees and a \$10 penalty. If a license has been canceled for more than five years, it can be reinstated only on the payment of \$25 and on the licentiate's passing an examination, the nature of which shall be determined by the department of law enforcement.

ILLINOIS

Society News.—Dr. Morton Hamburger Jr., Chicago, discussed "Serum Therapy of Lobar Pneumonia" before the Kane County Medical Society April 13.—At a meeting of the Champaign County Medical Society in Urbana April 14 Dr. French K. Hansel, St. Louis, spoke on "Various Manifestations of Allergy."—Dr. James Paul Bennett, Chicago, addressed the Bureau County Medical Society April 12 in Princeton

on "X-Ray of the Chest and Mediastinum."—Dr. Paul H. Harmon, Chicago, discussed "Poliomyelitis: the Treatment of Acute Poliomyelitis" before the Morgan County Medical Society at Jacksonville April 14.—Dr. Leon Unger, Chicago, addressed the Winnebago County Medical Society at Rockford, April 12, on "Differential Diagnosis and Treatment of Asthmatic Conditions."

CHICAGO

Courses on Cancer.—James W. Cook, professor of chemistry, University of London, will present two courses on cancer at the University of Chicago this summer, June 15-July 21. One will be on "Cancer-Producing Chemical Agents and Their Biological Effects" and one on "Polycyclic Hydrocarbons and Their Relationship to Biological Problems." The latter course is concerned with the relationship of cancer to hormones.

Seek to Lower Maternal Mortality.—New regulations will be enforced in Chicago hospitals in an effort to reduce maternal deaths. In the future maternity divisions of hospitals are required to be separated from other services. There must be isolation quarters for infected mothers and a separate nursery for infectious infants. Delivery rooms must be separated from surgical and medical departments. Visitors in the maternity division must be limited to two a day in addition to the husband and must be excluded during nursing periods. Children may not be admitted. Contact with babies is prohibited and visitors must not be permitted to sit on the beds. Other provisions pertain to the personnel, sanitation and facilities used in the care of maternity patients.

INDIANA

District Meetings.—The Tenth District Medical Society was addressed in Michigan City April 8 by Drs. Percival Bailey, Chicago, on "Technic and Results of Operation for Brain Tumor"; Newell C. Gilbert, Chicago, "Cardiorenal Diseases," and Frederick H. Falls, Chicago, "Management of Eclampsia and Toxemia" and Reuben L. Kahn, Sc.D., Ann Arbor, Mich., "Interpretation of Some Paradoxical Reactions in Syphilis" and "Role of Skin Immunity and Allergy."—The Twelfth District Medical Society was addressed at the Potawatomi Inn, Pokagon, May 19, among others, by Dr. David Benjamin Martinez, Pittsburgh, on "Cesarean Section—Indications and Contraindications" and J. H. Muyskens, Ph.D., Institute of Human Adjustment, University of Michigan, on "The Emergent Process of Speech"; other speakers included some officers of the state medical association.—At a meeting of the Ninth District Medical Society in Noblesville May 17 the speakers included Dr. Norman R. Kretzschmar, Ann Arbor, on "Toxemias of Pregnancy"; in the evening, Jepson Cadou, Washington, D. C., and Indianapolis, addressed the banquet.

IOWA

State Medical Election.—Dr. Felix A. Hennessy, Calmar, was named president-elect of the Iowa State Medical Society at its annual meeting May 13 and Dr. Arthur W. Erskine, Cedar Rapids, was installed as president. Dr. Robert L. Parker, Des Moines, was reelected secretary. Des Moines was selected for the next annual meeting May 10-12, 1939.

Outbreak of Trichinosis.—Eight persons were reported ill with trichinosis in O'Brien County, according to the state medical journal. Four hogs had been butchered on a farm March 1. The woman developed diarrhea and abdominal discomfort March 7, after having eaten some of the raw pork. March 11 the mother, father and five children began eating smoked sausage; and they became ill, March 21. The symptoms were diarrhea, muscular pains, puffiness of the eyelids, swelling of the legs and body, urticarial lesions and itching. Some of the ground pork had been given to relatives in town; a girl became ill after eating uncooked meat but the mother and father, who ate only cooked meat, escaped infection. Examination of the sausage in the state hygienic laboratory showed it to be heavily infested with larvae of *Trichinella spiralis*. It was estimated that 27,000 larvae were present in five ounces of sausage, about 180 larvae per gram.

KANSAS

State Medical Election.—Dr. Clifford C. Nesselrode, Kansas City, was chosen president-elect of the Kansas Medical Society at its annual session May 12, and Dr. Noble E. Melencamp, Dodge City, was inducted into the presidency. Dr. Harry L. Chambers, Lawrence, is the secretary. The next annual meeting will be in Topeka May 1-4, 1939.

MAINE

State Medical Meeting.—The Maine Medical Association will hold its eighty-sixth annual meeting at Bar Harbor June 26-28 under the presidency of Dr. Ralph W. Wakefield, Bar Harbor. The program includes conferences on miscellaneous subjects and papers by the following, among others:

- Dr. Adam P. Leighton, Portland, The Low Transverse Cervical Cesarean Section.
- Dr. John R. Fraser, Montreal, Control and Management of Puerperal Infection.
- Dr. Fuller Albright, Boston, Endocrinology in Relation to Obstetrics and Gynecology.
- Dr. Frank H. Jackson, Houlton, Medical Publicity.

A symposium on acute respiratory infections will be presented by Drs. Frederick T. Hill, Waterville; Donald S. King, Boston; James L. Wilson, Detroit, and Edward D. Churchill, Boston. One on cancer will be conducted by Clarence C. Little, Sc.D., Bar Harbor, Maine; Miss Elizabeth Fekete, Bar Harbor; Arthur M. Cloudman, Ph.D., and John J. Bittner, Ph.D., all of the Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Maine. Reunions of the alumni of Boston University, Johns Hopkins, Bowdoin, McGill and Harvard medical schools will be held and special luncheons for past presidents and county secretaries. The speakers at the annual banquet, at which "fifty year" medals will be presented, will include Gov. Lewis O. Barrows, Dr. Delmer Allan Craig, Bangor, on "The Doctor, Family Friend or Public Servant," and Dr. Frank H. Lahey, Boston, "The Medical and Surgical Management of Peptic Ulcer."

MARYLAND

New Officers of Medical Faculty.—Dr. Dean D. Lewis, Baltimore, was elected president of the Medical and Chirurgical Faculty of Maryland at its annual meeting April 27. Other officers include Drs. Victor F. Cullen, State Sanatorium; Frederic V. Beitler, Baltimore, and William D. Noble, Easton, vice presidents, and Dr. Walter D. Wise, Baltimore, who was reelected secretary. The next annual session will be held at Baltimore April 25-26.

Hospital News.—Construction will soon begin on additions at the Hospital for Women, Baltimore, to include a new four story wing, which will increase the capacity from ninety-five to 120 beds for adults; the improvements under consideration will cost about \$330,000. Work has begun on the new \$320,000 addition to the Negro branch of the Maryland Tuberculosis Sanatorium, Henryton; the unit is expected to be available for occupancy in November, with facilities for from 450 to 475 patients, an increase of 250 beds.

MICHIGAN

Appointments to Basic Science Board.—According to the state medical journal, the following have been appointed members of the recently created basic science board: Warren O. Nelson, Ph.D., Detroit; John P. Van Hartsma, Ph.D., Grand Rapids; Rev. Father George Shiple, Detroit, and Ralph C. Huston, Ph.D., Michigan State College, East Lansing. The appointees are all teachers who are not engaged in the actual practice of any of the healing arts. Another member will be selected from nominations among chiropractors, it was reported.

Graduate Course in Pediatrics.—The Michigan State Medical Society, the state department of health and the department of graduate medicine, University of Michigan, and the Michigan Chapter of the American Academy of Pediatrics sponsored a graduate course in pediatrics at Grayling, Traverse City, Petoskey and Alpena during May. Four lectures at weekly intervals made up the course and the instructors included:

- Dr. John L. Law, Ann Arbor, Management of Meningitis, Erysipelas, Scarlet Fever and Streptococcus Infections in General with Particular Reference to the Use and Abuse of Sulfanilamide.
- Dr. Wyman C. Cole, Detroit, Nontuberculous Infections in the Respiratory Tract as They Occur in Infancy and Childhood.
- Dr. James L. Wilson, Detroit, The Newborn Period: Asphyxia (role of analgesic in production of), Resuscitation, Hemorrhage, Atelectasis and Other Conditions of the Newborn.
- Dr. Joseph A. Johnston, Detroit, Nutritional Studies in Infant Feeding: Comparative Study of Various Types of Infant Feeding; Diet Requirement in the Older Child and the Adolescent; Relation Between Infection and Nutrition.

Society News.—Dr. Joseph Brennemann, Chicago, discussed "Bronchiectasis, Atelectasis, Emphysema and Allied Conditions in Children" before the Washtenaw County Medical Society in Ann Arbor April 12. The Oakland County Medical Society was addressed in Ann Arbor May 11; the speakers were, among others, Drs. Frederick A. Coller on "Surgical Aspects of Gastrointestinal Disease" and Raphael Isaacs, "Some Diagnostic Points in Diseases of the Lymph Nodes."

Carl E. Guthe, Ph.D., director of the museum of anthropology, University of Michigan, lectured in the evening.—The Bay County Medical Society and the Saginaw Valley Academy of Ophthalmology and Otolaryngology were addressed April 6 by Dr. William Mithoefer, Cincinnati, on "Nasal Sinus Problems of Interest to the General Practitioner."

MISSOURI

Endowment Fund for Medical Library.—The nucleus of an endowment fund for the library of the Jackson County Medical Society was derived from the proceeds of a tea May 6 given by the woman's auxiliary. The tea was designed as an antique exhibit and hobby show.

State Medical Election.—Dr. James R. McVay, Kansas City, was chosen president-elect of the Missouri State Medical Association at its annual meeting May 4, and Dr. Bernard W. Hays, Jackson, was inducted into the presidency. The next annual session will be held at Excelsior Springs.

District Meeting.—The Second Councilor District Medical Society was addressed in Hannibal April 7. The following, among others, spoke: Dr. Augustin P. Munsch, "Chronic Rheumatoid Arthritis"; Dr. Ralph A. Kinsella, "Streptococcus Infections and Sulfanilamide," and Dr. Cyrus E. Burford, "Urology in Children"; all are members of the staff of the St. Louis University School of Medicine, St. Louis.

Society News.—A symposium on undulant fever was presented before the St. Louis Medical Society April 6; the speakers were Drs. Omer E. Hagebusch, Harry G. Bristow, Roland S. Kieffer, Arthur H. Deppe, John Grey Jones and T. Wistar White. A symposium on office procedures in minor surgery was conducted before the society March 22; the speakers were Drs. Theodore H. Hanser on "Superficial Infections"; Edward L. Keyes, "Subcutaneous Tumors"; Robert W. Bartlett, "Ingrown Toenail"; Clinton W. Lane, "Warts, Moles and Keratoses," and Ralph M. S. Barrett, "Anesthesia in Office Practice."

NEW HAMPSHIRE

State Medical Election.—Dr. Clarence O. Coburn, Manchester, was elected president of the New Hampshire Medical Society at its recent annual session and Dr. James B. Woodman, Franklin, vice president. Dr. Carleton R. Metcalf, Concord, is the secretary.

NEW JERSEY

Dr. Stanley Awarded Rosenberger Medal.—Wendell Meredith Stanley, Ph.D., of the Rockefeller Institute, Princeton, will receive the Rosenberger Medal of the University of Chicago in recognition of his achievement in isolating crystalline forms of the filtrable viruses, it was announced May 25. The medal, founded by Mr. and Mrs. Jesse L. Rosenberger for distinguished achievement in the advancement of learning or for notably great service in the promotion of human welfare, has been awarded five times previously. Dr. Stanley received his degree of doctor of philosophy from the University of Illinois in 1929; he has been a member of the staff of the Rockefeller Institute since 1931.

Society News.—At a meeting of the Bergen County Medical Society in Bergen Pines May 10 Drs. Chevalier Jackson and Chevalier L. Jackson discussed bronchoscopy.—A symposium on comprehensive planning of medical care was presented before the Passaic County Medical Society in Paterson recently by Mr. Sherrard Ewing, executive director of the Paterson Community Chest and Social Planning Council; Emil Frankel, Ph.D., director, division of statistics and research, New Jersey Department of Institutions and Agencies, and Dr. Thomas K. Lewis, Camden, chairman, board of trustees and medical practice committee, state medical society.—Miss Margaret Ritchie, Newark City Hospital, Newark, was reelected president of the Association of Medical Record Librarians of New Jersey for her third successive term at its annual meeting May 4.—Dr. Ralph Colp, New York, discussed "Gallbladder Disease as a Surgical Problem" before the Academy of Medicine of Northern New Jersey May 26.

NEW YORK

Alumni Reunion.—The Association of the Alumni of Albany Medical College will hold its annual meeting and banquet at the Colonial Country Club, Albany-Schenectady Road, June 13.

State Medical Election.—Dr. Terry M. Townsend, New York, was chosen president-elect of the Medical Society of the State of New York at its annual meeting in New York City May 10. Dr. William A. Groat, Syracuse, was inducted

into the presidency. Dr. Walter W. Mott, White Plains, was elected a vice president and Dr. Peter Irving, New York, was reelected secretary.

New State Hospital Building Program.—About \$40,000,000 will be spent by the state in constructing public buildings, hospitals, schools and prisons through the use of funds authorized under the bond issue voted by the people at the last election, according to the *New York Times*. In the first year, beginning July 1, about \$26,000,000 will be spent. Most of this has been allotted to the department of mental hygiene. The plans include a state school for mental defectives with a capacity of 3,000 patients at a cost estimated at \$12,000,000. The site probably will be on Staten Island or elsewhere in the vicinity of New York City. The school is intended for male and female patients. An addition is now being erected to the building for infirm patients of the Brooklyn State Hospital which will increase the capacity for these patients by about 400 and will cost about \$437,000. Ten one story buildings for tuberculous patients will be added to the two existing buildings at the Central Islip State Hospital. This group of buildings will increase the patient capacity by about 1,000 and will house all the tuberculous patients for the hospitals under the department of mental hygiene in the metropolitan district. The cost of this project will be \$1,115,000. About 1,100 infirm patients at the Kings Park Hospital will be housed in a new building to be built at a cost of around \$1,940,000. At the Pilgrim State Hospital it is proposed to construct a group of interconnected buildings to care for about 1,500 patients, the cost to be about \$589,000. An addition is being constructed to the reception building at Creedmoor State Hospital which will increase its capacity by 100 patients and cost about \$1,940,000. Clinton prison at Dannemora is to have a new hospital for eighty-two general and 116 tuberculous inmates. It is intended to make this hospital the center for all tuberculous inmates in state prisons and the cost will be about \$630,000. A ward building is also to be erected at Dannemora State Hospital for Mental Cases with a capacity of 100 inmates, costing about \$122,000.

New York City

Plan for Free Maternity Care.—Every expectant mother in Brooklyn will receive full medical attention whether she can pay for it or not in accordance with a plan announced in the *New York Times* May 4. The plan is under the auspices of the Kings County Medical Society and provides that members of obstetric staffs in Brooklyn's forty-nine public and private hospitals will grant consultation when called on. Compensation will not be required except when the attending physician provides evidence that the patient can afford to pay for all or part of his services. Physicians attending maternity cases will be required to call consultants from the obstetric staffs in all instances in which complications develop, while interns will perform obstetric operations only if a member of the hospital staff is present. The new program was adopted following a survey by the committee on maternal welfare of the Kings County Medical Society.

Society News.—Dr. Kingsley Roberts addressed the Society of Medical Jurisprudence May 9 on "Relation of Voluntary Health Associations to a National Health Program."—Among others, Dr. William F. MacFee addressed the New York Surgical Society May 11, on "Malignant Tumors of the Salivary Glands."—The sixth clinical meeting of the Brooklyn Thoracic Society and the bureau of tuberculosis of the New York City Department of Health was addressed May 20 by Drs. Nagla M. Laf Loofy on "Case Finding Through Periodic Contact Examinations"; Mary R. Eleston, "Supervision of Primary Lesion in Children," and Herbert R. Edwards, "The Department of Health Program for the Control of Tuberculosis."—The section on laryngology, rhinology and otology of the Medical Society of the County of Kings gave a testimonial dinner to Dr. Wells P. Eagleton, Newark, N. J., May 11. Dr. Eagleton addressed the section meeting on "Toxic and Allergic Meningitis with an Overflow of Bacteria from the Ear, Nose and Throat."

New Cancer Hospital Nearly Finished.—The cornerstone of the new Memorial Hospital for the Treatment of Cancer and Allied Diseases was placed May 20. The speakers included Dr. James Ewing, director of the hospital, and the ceremonies were held on the anniversary of the laying of the cornerstone of the original Memorial Hospital fifty-four years ago. The structure when completed will cost about \$4,000,000, of which \$3,000,000 was originally granted by the General Education Board of the Rockefeller Foundation. The site,

opposite the Rockefeller Institute for Medical Research, the Cornell University Medical College and the New York Hospital, was given by John D. Rockefeller Jr. The twelve story penthouse building, which is nearly completed, will provide accommodations for 168 beds with provision for expansion. It will contain extensive facilities for diagnostic and treatment clinics, surgery, research laboratories and special provision for irradiation with x-rays and radium. According to the *New York Times*, the box placed in the cornerstone contained publications of the hospital; data on the present five year cure rates at the institution in the different types of cancer, external and internal; gold seeds filled with radon, and other radium applicators developed at the hospital; photographs of the nursing, laboratory, clinical, fellowship and resident staffs, and other articles and documents.

NORTH CAROLINA

Personal.—Dr. James Street Brewer, Roseboro, was appointed a member of the state board of medical examiners at its annual meeting in Pinehurst recently.—Dr. George Boyce Lynch, Brevard, has been appointed health officer of Transylvania County.

Society News.—The Buncombe County Medical Society was addressed in Asheville May 30 by Dr. Norris W. Vaux, Philadelphia, on "Breech Deliveries"; Dr. Walter R. Johnson addressed the society May 16 on "Value of the Galactose Tolerance Test in Differentiating Medical from Surgical Jaundice."—At a meeting of the Catawba Valley Medical Society in Morganton, May 10, the speakers were Drs. William L. Kirby, Winston-Salem, on "Newer Conceptions About Eczema" and John S. Gaul, Charlotte, "Fractures of the Extremities."—A symposium on pneumonia was presented at a meeting of the Iredell-Alexander County Medical Society, Statesville, March 8, by Drs. James P. Rousseau, Winston-Salem, Charles B. Herman, Charles L. Bittinger, Statesville, John Y. Templeton, Mooresville, and Joseph S. Holbrook.—Dr. Harry L. Johnson, Hickory, was elected president of the North Carolina Hospital Association at its annual meeting in Pinehurst April 13.—At a meeting of the Mecklenburg County Medical Society, Charlotte, April 5 the speakers were Drs. John Donnelly, Jasper S. Hunt and Andrew D. Taylor in a symposium on meningitis.

OHIO

Industrial Commission Names Silicosis Referees.—The Ohio State Industrial Commission has appointed three physicians as referees for claims to compensation for silicosis under the workmen's compensation law. Provision for the referees was made in a law recently enacted by the legislature adding silicosis to the list of compensable diseases. The appointees are Drs. Raymond C. McKay, assistant clinical professor of medicine, Western Reserve University School of Medicine, Cleveland; Joseph A. Muenzer, Toledo, formerly associated with the bureau of tuberculosis in the state department of health, and William M. Doughty, director of radiology at Christ Hospital and Children's Hospital, Cincinnati. All claims for disability or death due to silicosis will be referred to these physicians for examination and recommendation for all medical questions.

OREGON

Medical Coordinator Appointed.—Dr. Neil F. Black, Klamath Falls, health officer of Klamath County, has been appointed state medical relief coordinator. He will have charge of developing methods of handling medical aid to those receiving old age assistance, to the blind, and dependent children; he will also work with the profession and civil authorities in furnishing medical aid. Dr. Black graduated at the University of Oregon Medical School, Portland, in 1935.

PENNSYLVANIA

Society News.—Clinics were conducted at a meeting of the Cambria County Medical Society in Johnstown May 12 by Drs. Raymond W. McNealy and Chauncey C. Maher, both of Chicago; in the evening Dr. McNealy discussed "Some Phases of Gallbladder Surgery" and Dr. Maher, "The Problem of Hypertension."—Dr. Albert F. Doyle, Johnstown, addressed the Lebanon County Medical Society, Lebanon, April 12 on "Public Health Aspects of Syphilis." Dr. Hans May, Philadelphia, addressed a meeting of the society May 10 on plastic surgery.—The McKeesport Academy of Medicine was addressed May 23 by Dr. Frank A. Evans, Pittsburgh, on obesity.—Drs. Robert L. Gilman, Philadelphia, and William

W. Bolton, Upper Darby, discussed syphilis before a meeting of the Northampton County Medical Society, Bethlehem, May 20.—Dr. Carl E. Irvin, Harrisburg, addressed the Dauphin County Medical Society May 3 on "Diagnosis and Treatment of Undulant Fever."—Dr. George E. Bennett, Baltimore, addressed the Harrisburg Academy of Medicine recently on "Low Back Pain."—Dr. Wendell J. Stainsby, Danville, addressed the Shenandoah County Medical Society at its May meeting on chronic arthritis.

Philadelphia

Patterson Fellowship and Teaching Fund.—The Patterson Fellowship and Teaching Fund is to be established at Jefferson Medical College, in accordance with the will of the late dean of the college, Dr. Ross V. Patterson. Two trust funds for \$60,000 each and one for \$30,000 were set up in the will but on the deaths of the beneficiaries the money will be used for the fellowship and teaching fund. It will go to graduates "whose records indicate ability beyond the average, to make possible to them further medical study, investigation and training, the better to fit them for careers in the practice of medicine, in medical teaching, in public health service, or in research." During such training the recipients are to be known as "Patterson Fellows." The will also stipulates that the fund be used to pay salaries of full time teachers in the Training School for Nurses of the Jefferson Hospital. Newspapers report that, if for any reason the college cannot accept the benefaction, it is offered in the order named to the University of Pennsylvania, Temple University and University of Pittsburgh.

TENNESSEE

Dr. Mallowney Retires as President of Meharry.—Dr. John J. Mallowney, since 1921 professor of public health and president of Meharry Medical College, Nashville, has announced his retirement, effective July 1. He will be succeeded by Dr. Edward L. Turner, professor of medicine. Dr. Mallowney was born in Seacombe, England, July 20, 1878, coming to the United States in 1887. He received his degree in medicine at the University of Pennsylvania School of Medicine, Philadelphia, in 1908. He served as professor of nervous and mental diseases, North China Union Medical College, Peking, 1908-1911; inspector of tenement and lodging houses, Philadelphia, 1912-1913; assistant chief of the Pennsylvania State Department of Health, 1913-1917, and head of the department of science and professor of chemistry and hygiene, Girard College, Philadelphia, 1917 to 1921 when he went to Meharry. Dr. Turner graduated at the University of Pennsylvania School of Medicine in 1928.

TEXAS

Surgical Meeting.—The Texas Surgical Society met in Houston April 4. Dr. Elbert Dunlap, Dallas, gave the president's address on "Surgical Diagnosis." The other speakers were:

- Dr. Nathan A. Womack, St. Louis, The Diagnosis of Cancer of the Bronchus.
- Dr. Edward White, Dallas, Perinephric Abscess.
- Dr. Eutus P. Bunkley, Stamford, The Perforated Peptic Ulcer.
- Dr. Charles C. Cade, San Antonio, The Conservative Treatment of Carcinomas.
- Dr. Walter G. Stuck, San Antonio, Peripheral Nerve Injuries Complicating Fractures.
- Dr. Gomer F. Goff, Dallas, Sulfanilamide in Pelvic Infections.
- Dr. George W. N. Eggers, Galveston, Elbow Fractures.
- Dr. George R. Enloe, Fort Worth, Obstructive Lesions of the Colon.
- Dr. Herbert T. Hayes, Houston, Electrocoagulation of Tumors of the Rectum.
- Dr. Albert O. Singleton, Galveston, The Anatomy of the Sympathetic Nervous System.
- Dr. John T. Moore, Houston, The Physiology of the Sympathetic Nervous System.

The next meeting will be held in Galveston in October.

WISCONSIN

Personal.—Harry Steenbock, Ph.D., professor of agricultural chemistry, University of Wisconsin, known for his work on vitamins, will receive an honorary degree at the university commencement June 20.—Dr. William D. Stovall, professor of hygiene, University of Wisconsin Medical School, Madison, has been appointed acting superintendent of the State of Wisconsin General Hospital, Madison, during the leave of absence of Dr. Robin C. Buerki to become director of study of the commission on graduate medical education.—The Medical Society of Milwaukee County gave a dinner in honor of Mr. Theodore Wiprud recently, following his resignation as executive secretary to accept a similar position with the Medical Society of the District of Columbia. Dr. Eben J. Carey, dean and professor of anatomy, Marquette University School of Medi-

cine, was toastmaster and the speakers included Drs. Raymond G. Arveson, Frederic; Stanley J. Seeger, Milwaukee; Rock Sleyster, Wauwatosa; Ralph P. Sproule, Edward L. Tharinger and John S. Gordan, Milwaukee. Mr. Wiprud was presented with a set of golf clubs by the society.

GENERAL

Alumni Smoker.—Alumni of Jefferson Medical College, Philadelphia, will hold a smoker at the Union League Club, 555 Post Street, San Francisco, June 15.

Medical Women's Association.—The twenty-third annual convention of the American Medical Women's Association will be held in San Francisco June 12-14, with headquarters at the Fairmont Hotel. The program includes the following speakers:

- Dr. Anita M. Muhl, San Diego, The Doctor's Mental Attitude.
- Dr. Ann P. Purdy, San Francisco, Nutrition.
- Dr. Kathleen M. Murphy, San Francisco, Relationship of the Estrogenic and Gonadotropic Hormones to Climacteric Symptoms.
- Dr. Olga L. Bridgman, San Francisco, The Psychiatric Aspect of the Juvenile Court.
- Dr. Evelyn M. Anderson, San Francisco, Clinical Conditions Related to the Adrenal Cortex.
- Dr. Amy N. Stannard, Berkeley, Calif., Family Relationship Affecting Delinquency.

Meeting of Medical Librarians.—The fortieth annual meeting of the Medical Library Association will be held at Boston June 28-30 at the Hotel Somerset. Sessions will be held at the Boston Medical Library and Harvard Medical School with open house in the libraries of the city. The speakers will include Drs. Henry R. Viets, Boston, Sanford V. Larkey, Baltimore, John F. Fulton, New Haven, Conn., and Mrs. Eileen R. Cunningham, Miss Isabelle T. Anderson, Mr. James F. Ballard and Mr. Herman H. Henkle, director, school of Library Science, Simmons College, who will conduct an institute for medical librarians. Other features will include symposiums on a "Guide to Medical Literature" and "Medical Literature of the Past."

Meeting of Urologists.—The American Urological Association will hold its annual meeting in Quebec June 27-30 under the presidency of Dr. David W. MacKenzie, Montreal. The program includes a symposium on sulfanilamide with the following speakers: Drs. Eli K. Marshall Jr., Baltimore; Edwin P. Alyea, Durham, N. C.; John A. C. Colston, Baltimore; James I. Farrell, Evanston, Ill.; Clarence R. O'Crowley, William L. James and Harold Lawrence Sutton, Newark, N. J.; Pearl F. Summerfeldt and David R. Mitchell, Toronto, and John L. Crenshaw and Edward N. Cook, Rochester. The following, among others, will speak:

- Drs. Charles J. E. Kickham and Norman H. Bruce, Boston, Urologic Complications in Malignant Disease of the Rectum.
- Drs. Dorrin F. Rudnick and Edward L. Cornell, Chicago, Strictures of the Ureter in the Female.
- Dr. Arthur Elmer. Belz, Los Angeles, A New Anatomic Approach to the Prostatic Capsule in Perineal Prostatectomy.
- Drs. Ernest Rupel and Richard C. Travis, Indianapolis, Mandelic Acid Therapy: Action of Enteric Coated Tablets of Mandelic Acid (as Monoethanolamine Mandelate) and Ammonium Chloride.

David L. Thomson, Ph.D., Montreal, will deliver the Ramon Guiteras Lecture on "Endocrinology in Its Relations to Urology."

Special Society Elections.—Dr. Walter R. Steiner, Hartford, Conn., was elected president of the American Association of the History of Medicine at its annual meeting May 2 and Dr. Henry E. Sigerist, Baltimore, was elected secretary. The next annual meeting will be in Atlantic City in May.—At the annual meeting of the American Association of Pathologists and Bacteriologists May 4 the following officers were elected: Drs. Earl B. McKinley, Washington, D. C., president; Carl V. Weller, Ann Arbor, vice president, and Howard T. Karsner, Cleveland, secretary. The next annual session will be held at Richmond, Va., April 6-7.—Dr. Oscar B. Hunter, Washington, D. C., was elected president of the American Therapeutic Society at its annual meeting April 2, and Dr. Joseph F. Elward, Washington, D. C., secretary.—Dr. Stephen W. Ranson, Chicago, was chosen president of the American Association of Anatomists at its meeting April 14 and Dr. Eliot R. Clark, Philadelphia, was named secretary. The next annual session will be held at Boston April 6-8.—Dr. Frank D. Dickson, Kansas City, Mo., was chosen president-elect of the American Orthopedic Association at its annual meeting May 5; Dr. William W. Plummer, Buffalo, N. Y., is president, Dr. Ralph K. Ghormley, Rochester, Minn., was reelected secretary. The next annual session will be held at Buffalo.—Dr. Tinsley R. Harrison, Nashville, Tenn., was elected president of the American Society for Clinical Investigation at its annual meeting May 2 and Dr. Isaac Starr Jr., Philadelphia, was chosen secretary.

CANADA

Balfour Lecture.—Dr. Gordon Gordon-Taylor of the staff of Middlesex Hospital, London, England, delivered the Donald C. Balfour Lecture in Surgery at the University of Toronto April 5. His subject was "Gastric Hemorrhage."

Society News.—Dr. Henricus J. Stander, New York, addressed the Academy of Medicine of Toronto, March 1, on "Cardiac Disease in Pregnancy."—Dr. Lyon H. Appleby, Vancouver, delivered the Osler Lecture of the Vancouver Medical Association March 1; his subject was "Quo Vadis, Medicina?"

Anniversary of Medical Library.—The *Bulletin* of the Academy of Medicine of Toronto dedicated its April issue in honor of the fiftieth anniversary of the Ontario Medical Library Association. The first annual meeting of the association, formed by the Toronto Medical Society, the Ontario Medical Association and the College of Physicians and Surgeons of Ontario, was held July 13, 1888. At the annual meeting of 1889 it was reported that the association had ninety-one members, 1,300 bound and 250 unbound volumes in the library and fifty-nine journals on file. In 1907, when the academy of medicine was organized with the library as its nucleus, it had 4,602 volumes and now has 27,065. The first book presented to the library was a copy of Oliver Wendell Holmes's "Medical Essays" with an inscription by the author. The special issue of the bulletin describing the collections in the library, especially mentions the influence of Sir William Osler, who throughout his life made many gifts to the library. One of the prized possessions is a collection of medical portraits made by Sir William and presented by his brother, Sir Edmund Osler, in 1909. A recent addition is a collection of about 200 volumes on pathology assembled by the late Prof. Oskar Klotz.

Government Services

Dr. Treadway Placed in Charge of Narcotic Farm

Dr. Walter L. Treadway, assistant surgeon general, U. S. Public Health Service, Washington, D. C., has been appointed medical officer in charge of the federal narcotic farm at Lexington, Ky., succeeding Dr. Lawrence Kolb, who is transferred to Washington to become assistant surgeon general. Dr. Treadway was assistant physician of the Jacksonville (Ill.) State Hospital from 1908 to 1912. He was commissioned as assistant surgeon general in the public health service in 1913 and was made chief of the division of mental hygiene of the service in 1930. Dr. Kolb has been medical director of the narcotic farm, the first of its kind, since its opening in 1935. He graduated at the University of Maryland School of Medicine in 1908.

Warning on Filled Milk Act

The Food and Drug Administration of the U. S. Department of Agriculture warns that it will institute legal action against all interstate shipments of any product falling within the statutory definition of filled milk. The warning follows the recent decision of the U. S. Supreme Court in the case of *United States v. Carolene Products Company*, which upheld the Federal Filled Milk Act of 1923 as constitutional. By its terms the act prohibits the interstate distribution of any combination of milk, cream or skimmed milk with any fat or oil other than the milk fat so as to resemble or imitate milk or skimmed milk in any form. The legislation was enacted after a congressional hearing. Congress determined and declared "That filled milk, as herein defined, is an adulterated article of food injurious to public health and its sale constitutes a fraud upon the public." The indictment in the *Carolene* case alleged the unlawful interstate shipment of "Milknut" and "Carolene" manufactured by Carolene Products Company of Litchfield, Ill. Analyses by the Food and Drug Administration showed the products to be composed essentially of evaporated skim milk and coconut oil in semblance of evaporated whole milk. After prosecution was started, the manufacturer filed a demurrer to the indictment on the ground that the act was unconstitutional. The demurrer was sustained by the federal court for the Southern District of Illinois. The United States appealed to the supreme court of the United States, which upheld the filled milk act as constitutional, according to a release from the U. S. Department of Agriculture.

Foreign Letters

LONDON

(From Our Regular Correspondent)

May 14, 1938.

Advance in the Treatment of Cancer

At the annual meeting of the Royal Cancer Hospital, Mr. Cecil Rowntree, senior surgeon, said that the hospital was now supplied with the latest and most efficient apparatus that it was possible to wish for and that they had consolidated the somewhat tentative conclusions toward which they had gradually been feeling their way. "We have now learnt," he continued, "the best ways of dealing with the widely different types of malignant disease. We now know which are the types of cancer best treated by purely surgical operation. We know that in other forms, such as cancer of the tongue, mouth and throat, we can confidently expect such results from radium bomb treatment as have never been equaled or even approached by any other form of therapy and with the Schaoul type of x-ray machine we are constantly and consistently curing such diseases as cancer of the lip and face and cancer of the skin with such certainty, simplicity and safety as has never been experienced before. In fact, give us a case of cancer in any of these situations in a reasonably early stage, and we will now guarantee its complete and speedy disappearance."

Rapid Decline of London's Child Population

The London County Council has just published a new edition of the Statistical Abstract for London, which shows a rapid fall of the child population. In 1937 only 417,028 children were attending public elementary schools, as compared with 560,527 ten years previously. Thus the child population declined by more than a fourth in this short period, and if this rate of decline should continue for fifty years the total at the end of that period would become less than a fourth of the present number. This decline of child population shows what is not generally understood—why a fall in our general population is inevitable under the present birth rate although our population still shows an annual increase. The reason is that children are not being produced in sufficient number to replace their predecessors, while the level of population is being maintained by the number of adults and their greater longevity. But this effect can be only temporary, as the level of population must ultimately depend on the number of children born and reared. Indeed, the fall of the general population is not far off. It is calculated that in 1940 or thereabouts our population will reach its maximum and then begin to decline, at first slowly and later more rapidly.

Vulvovaginitis in Children

The London County Council has now the largest hospital system in the world, containing 36,000 beds in which all kinds of specialization are carried out. It has had a wide opportunity for observing vulvovaginitis in children and has for more than two years maintained a careful watch for this disease among the many thousands of children under its care. It has just published a report in which medical superintendents of its hospitals, gynecologists, pediatricians and pathologists have cooperated. In the period mentioned, 627 cases of vulvovaginitis were discovered in the council's general and special hospitals, residential schools and homes and nurseries for infants, of which only thirty-two were found to be gonococcal, and in the great majority of the latter were nonsexual in origin.

GNONOCOCCIC VULVOVAGINITIS

Infection is usually accidental, the result of contamination of the vulva with infected fomites, such as towels, sponges, bed linen or lavatory seats. The manner in which material for bacteriologic diagnosis is collected is of great importance. Swabs

should be taken only by a clinician expert at the task. A probe mounted with absorbent cotton must be passed well into the vagina and withdrawn with some discharge on it. In the treatment no packing of the vagina should be carried out and only nonirritating lotions should be used, such as 0.5 per cent strong protein silver. Estrogen in daily doses of from 3,000 to 6,000 units by mouth has proved useful. Sulfanilamide has given encouraging results, but it is too soon to assess its value. The vulva should be swabbed with a lotion and dusted with a drying powder as often as is necessary to keep it free from pus and as dry as possible. There is a tendency to relapse. Criteria of cure are negative tests (films, cultures and gonococcus complement fixation) for a minimum of four months.

NONGONOCOCCIC VULVOVAGINITIS

Nongonococcal vulvovaginitis is not uncommon between the ages of 2 and 7 years. It may be due to acute specific infections (chickenpox, measles and scarlet fever), acute throat infections or foreign bodies. Differentiation between the various types can be made only by bacteriologic tests, though clinical signs are highly suggestive. Thus, in diphtheroid infections, redness of the vulva with scanty discharge is present. Foreign bodies produce a blood-stained offensive discharge; staphylococci, a thick creamy discharge; streptococci, a thinner colorless discharge; *Bacillus coli*, an offensive discharge with characteristic odor. The treatment calls for considerable judgment. Many cases are mild and require little except baths and local cleanliness. Severe cases should be treated on the same lines as gonococcal cases. The great majority of cases clear up in two or three weeks.

ADMINISTRATIVE ASPECTS

Administrative aspects are of great importance, as an organization undertaking the care of children, sick or healthy, has two obligations: (1) to protect noninfected children from infection; (2) to detect, isolate and treat any case. In the council's schools and receiving homes the children's underclothing and bed linen are watched for evidence of discharge. For obvious reasons the examination of any little girl is not a light matter but must be undertaken if necessary. If there is definite evidence of vulvovaginitis, she must be transferred to a hospital. It is the practice of the council to concentrate at a special hospital all cases in which a report is made of the presence of "organisms morphologically resembling the gonococcus."

PARIS

(From Our Regular Correspondent)

May 14, 1938.

Decline in Birth Rate Alarms France

The drop in birth rate as compared to the increase in the number of deaths is causing much anxiety here. The present and future defense of the country calls for a birth rate which is at least equal to that of Germany and Italy. In these two countries there has been a constantly increasing excess of births over deaths during the past five years. A committee was appointed several months ago by the Académie de médecine of Paris to study methods of checking the drop in birth rate. At the April 26 meeting Professor Lereboullet submitted the report of the committee. The chief causes of the decline in the birth rate were found to be contraceptive methods and the widespread use of abortifacients or induced abortion. There were only 630,000 births in 1937 as compared to a little over a million in 1876. From 1935 to 1937 inclusive there were 57,117 more deaths than births in France, as compared to an excess of 950,000 births over deaths in Germany and of 775,000 in Italy during 1936 and 1937. The committee believed that the causes of the denatality in France were chiefly moral and economic. The following were the recommendations of the committee:

1. That the gravity of the denatality question be made known to the public by every possible method.

2. That an appeal be made to the moral and spiritual forces of the country to encourage the raising of large families, by granting large subsidies which increase proportionately to the number of children.

3. That the danger of induced abortions be impressed on the women of the country and that the laws already in existence which entail imprisonment and heavy fines for abortionists be rigorously applied.

Polycystic Disease of the Pancreas

Only ten reported cases of polycystic disease of the pancreas could be found by Loeper, Lemaire and Lesobre, who have published a personal observation in the May 7 issue of *Progrès médical*. Polycystic disease of the pancreas, although related to unilocular or multilocular cyst formation, so far as its pathogenesis is concerned, differs from these more common conditions in its gross and microscopic appearance as well as in its clinical manifestations. Polycystic disease of the pancreas is characterized by the formation of multiple minute cysts similar to those found at times in the parotid, breast, liver, kidney and ovary. The patient in question was a woman aged 77 who was admitted to the service of Professor Loeper Sept. 13, 1937, complaining of a severe diarrhea of a month's duration. Examination revealed an intense icterus, the urine containing both bile salts and pigments and stools, which although clay colored often showed the presence of blood. The clinical picture was that of an obstructive jaundice. The lower margin of a firm liver was felt three fingerbreadths below the costal arch, and the distended gallbladder could be plainly outlined on palpation. There was a marked loss of weight and a severe pruritus. The patient died five weeks after admission. At the necropsy a greatly enlarged liver and distended gallbladder and common duct were first noted. The head of the pancreas was hard and, on section, the pancreas presented innumerable cysts varying in size from that of a lentil to that of a pea. On microscopic study these cysts were seen, for the most part, to be empty, a few showing several layers of cylindric epithelium. But little pancreatic tissue was to be found anywhere, but there was a hyperplasia of the few persisting islands of Langerhans. The latter finding could explain the absence of a glycosuria which had been noted clinically. Sections of the liver, on microscopic examination, showed all the typical changes of an obstructive jaundice.

Of ten reported cases, in three the polycystic disease of the pancreas had not given rise to symptoms and was found at necropsy; in two cases there was an accompanying severe diabetes, one of the patients dying in coma; two showed clinical evidences of obstructive jaundice, one with glycosuria; only one presented symptoms of indigestion and the tenth patient had a progressive cachexia with anemia and steatorrhea.

It is impossible at present to explain the origin of this polycystic condition of the pancreas, except on a congenital basis.

Program of 1938 French Pediatric Congress

The tenth annual meeting of the French Pediatric Congress will take place October 6-8. The meeting place is the medical amphitheater of the Paris Children's Hospital. The following will form the subjects of special reports and general discussion:

1. Severe anemias in infancy, by Dr. Louise Weill of Lyons.
2. Toxi-infections in infancy, by Dr. R. A. Marquiez and Miss Ladet.

3. Megalocolon and dolichocolon, by Drs. Rohmer and Boppe.
American pediatricians who wish to take part in the discussions are asked to write to Dr. Maurice Lamy, 94 rue de Varenne, Paris (7).

Program of Seventeenth Annual Neurologic Reunion

This year's neurologic reunion will be held May 31 and June 1 at the Hôpital Salpêtrière, where the late Professor Charcot held his clinics. The chief subject for discussion will

be the role of the pupil in neurology. Papers will be read by Drs. Bollock, Edouard Hartmann, Monbrun, Velter and Tournay. Particular attention will be paid first to objective study (pupillometry) of the pupil while at rest and the pupillary reactions; second, to changes in the pupils in disease and, third, to search for physiopathologic explanations of the preceding. Other papers include as subjects cerebral blood supply, experimental polyneuritis, toxic epilepsy, nervous complications of leukemia and diagnosis and indications for operative intervention in craniocerebral injuries.

Program of 1938 Meeting of French Medical Congress

The twenty-fifth annual French Medical Congress will be held September 26-28 inclusive at Marseilles under the presidency of Professor Olmer. The subject chosen for reports and discussion are (1) spirochetosis of infectious jaundice, (2) hypochloremia and (3) present day treatment of avitaminoses in adults. American physicians who wish to attend the congress can receive information by writing to Prof. Henri Roger, 66 Boulevard Notre-Dame, Marseilles.

Proposed Statue to Honor the Memory of Laënnec

At a meeting of the Assemblée française de médecine held in May 1936 at the birthplace of the internationally known clinician Laënnec it was decided to ask for subscriptions to erect a monument near the site of the former Charity Hospital in Paris, where Laënnec taught for many years.

BERLIN

(From Our Regular Correspondent)

April 19, 1938.

News of the Universities

One of the important functions of a university is to maintain an adequate supply of prospective professors. Many qualified young scholars, however, find it impossible to remain at the universities as docents without financial assistance, and this economic consideration threatens a real shortage of younger teachers. Regulations relative to the compensation of docents have recently been planned to provide an official subsidy for every graduate who receives a teaching certificate. The young scholar would thus be guaranteed a steady means of livelihood. It seems that a critical situation has been developing in which promising young docents were forced to quit the universities for economic reasons and to seek a livelihood in other fields. The new plan was scheduled to go into effect April 1 but its inauguration has as yet not been possible. Temporary reforms to aid needy docents have, however, been introduced. Special subsidies are available to a docent who has a scholastic record and a personality which augur well for a successful academic career, good moral character, a disposition to act at all times "unreservedly in harmony with the national socialist state and to be an active exponent of the national socialist weltanschauung," and, further, eligibility under the German statute governing the racial extraction of public employees, an earnest desire to be of service to the university, and, finally, economic circumstances that justify the granting of a subsidy. A whole series of further conditions, based on the merits of the individual case, is imposed at the time the assistance is granted. A subsidy is extended for a period of two years but may be stopped sooner if reasonable grounds for dissatisfaction with the docent's academic activities develop or in the event of other disqualifying circumstances. Rectors of the universities and deans of the faculties are required to report any circumstance that might be a basis for disqualification. Other officials, the local *fuehrers* of docents, for example, may of their own initiative propose the revocation of a grant.

The statute to regulate dueling among students has lately undergone revision. There is a tendency to enlarge the jurisdiction of the student courts of honor. This trend has a justi-

fiable basis in the formerly too great powers of the courts of honor; these tribunals often undertook to decide cases that related to "honor" in only the most superficial sense and which really had to do with gross breaches of discipline. Under the last named classification fall all instances of public insults, malicious slander and unprovoked jostling which are perpetrated by a student while in an intoxicated or semi-intoxicated state. The new law places a more limited construction on the term "case of honor"; a valid case must now be based only on genuine, serious, deliberate affronts to a student's honor. Weapons must no longer be taken up for every trifling provocation.

The rules of the duel have been altered. Pistol duels among students are prohibited. In place of the stationary fencing bout, the "starke mensur" fought with heavy sabers, the law prescribes the mobile mensur with the light Hungarian saber. Moreover, the national *fuehrer* of students has until further notice reserved to himself the right of passing on the legality of all saber duels approved by the courts of honor. (The foregoing regulations do not apply to the military duel; the army has a code of its own which is much more stern than that of the students. It sanctions, for example, a pistol duel that must be carried on until one party is *hors de combat*.)

Officialdom has recently become particularly interested in improved dental services for students. Special dental services are to be made available to all university students. The fees asked for filling teeth will be fixed by law. Students unable to pay for such service will be treated free of charge; 220,000 marks has been allocated for this purpose by the government.

Finally, the *anschluss* with Austria has made necessary a vast number of changes within the universities of the annexed territory. The data available with regard to these changes are herewith summarized: The Austrian minister of education, Dr. Menghin, has issued decrees designed to place the universities in line with the new régime. Orders have been given for the dismissal of certain faculty members and the installation of new academic functionaries. Regulations governing examinations which derived from the political complexion of the late Austrian republic were immediately set aside when the nazis came to power. To keep the Austro-German universities from becoming overalienized by Jewish matriculants, the minister has imposed restrictions on the enrolment of Jewish students. No further registrations of Austro-German Jews will be accepted for the summer semester of 1938; already accepted registrations of Jews will be allowed to stand for the time being subject to cancellation. In future a numerus clausus of Jewish students will be established. Special rules apply to the matriculation of foreign Jews.

It has been decreed that all members of academic faculties who on racial or political grounds were unable to take the oath of allegiance to Adolf Hitler, and all those who were arrested or dismissed from their posts at the time the nazis took over, are until further notice ineligible for academic service. The former statute of higher education has been nullified. The government expects that former students who were expelled from the universities under the last mentioned law as adherents of the nazi movement will now resume their interrupted studies.

Vienna University has already lost a number of professors through dismissal. Professor Arzt, ordinarius in dermatology there, appears to be among those removed. Arzt is not a Jew. For many years he has been editor-in-chief of the *Wiener klinische Wochenschrift* but on the cover of the April 1 issue (No. 13) his name is absent from the accustomed place and in its stead appear the words "acting editorial staff." Whether this means that Arzt's connection with the journal is definitely severed cannot be stated at the present writing.

Dr. Kronfeld has for several decades edited the *Wiener medizinische Wochenschrift* and has also been especially active in the organization of international graduate study at Vienna. The April 2 (No. 14) issue of this journal carried the name

a new editor. Moreover, page 1 of this issue was given over to an appeal for support of the new régime and an announcement that the publication had been transferred to "Aryan ownership, Aryan management and Aryan editorship."

The Acceleration of Development in Childhood

It is common knowledge that an acceleration in the rate of growth among children has been reported from various countries. Dr. Bennholdt-Thomsen, senior physician at the children's hospital of the university of Frankfurt on the Main, has recently attempted to establish the scientific basis of this remarkable change by means of a questionnaire survey of girls in Hesse-Nassau province. On the basis of this study he formulates the following conclusions: (1) The growth of the present generation of children is more rapid as against that of earlier generations, (2) city children are taller than country children, (3) within the cities children whose parents are in good economic circumstances are taller than children of the poorer classes, (4) more premature appearance of the centers of ossification (evaluated as another sign of development) also takes place earlier among the city children with good economic backgrounds than among the poorer children, (5) menstruation unquestionably begins earlier among the present generation as against earlier generations, (6) city girls begin to menstruate at an earlier age than country girls, (7) among the urban population, daughters of well-to-do parents located in the largest cities menstruate earlier, whereas girls of the slum areas menstruate latest, (8) in a majority of families the daughters menstruate at an earlier age than did their mothers, (9) both primary and secondary dentitions, the former in particular, occur earlier among the daughters as contrasted with the mothers and (10) even with respect to the earlier eruption of primary dentition the geographic sequence remains: city, small town, country; this phenomenon too is manifested earlier among city children.

The author advances the following explanation of this earlier development: Emigration of the restless, more lively elements from the rural community has led to a great accumulation of nervous, sensitive, impressionable types of people in the urban areas. These elements have further multiplied within the city. Meanwhile the many sided phases of urban life have come to exert a cumulative effect on this more intelligent group of the population. The result has been an earlier beginning of growth and an accelerated rate of development among the youth of today. As a possible means of combating this phenomenon the author suggests planned decentralization to curb the further growth of the mammoth metropolis of today and an attempt to induce the struggling urban masses to return to the land.

Eightieth Birthday of Professor Pfeiffer

Prof. Richard Pfeiffer of Breslau, bacteriologist, celebrated his eightieth birthday March 27. Pfeiffer began his professional career as a military surgeon. From 1887 to 1891 he served as assistant to Robert Koch and in the latter year was appointed director of the Scientific Section of the Prussian Institute of Infectious Diseases, Berlin. In 1897 he served on the German Commission for Investigation of Plague in India and in the following year, with Robert Koch, he studied malaria in Italy. Pfeiffer became *ordinarius* in hygiene at Königsberg in 1899 and assumed in 1909 a similar post at Breslau, where he served until his retirement in 1925. He was the first to describe the development of the Coccidia. Best known and most associated with his name was the discovery and isolation of the influenza bacillus in 1892. Pfeiffer's phenomenon is of great value in the diagnosis of cholera. With Wilhelm Kolle he developed methods of immunization against typhoid, cholera and plague. His studies of the delimitation of resistance by genuine active immunity have become fundamental principles of immunology. His textbook of microbiology is perhaps the best known of his publications.

BUCHAREST

(From Our Regular Correspondent)

May 9, 1938.

The Antianaphylactic Action of Vitamin C

Dr. Nitulescu made experiments by regularly giving from 100 to 200 mg. of vitamin C daily to children who were inoculated with antidiphtheritic serum, with a view of preventing anaphylaxis. His experience in these experiments was that vitamin C is actually capable of preventing anaphylaxis, though not in every case. Among forty-one children who received vitamin C, only six had anaphylactic symptoms, while among forty-five children not receiving vitamin C twenty-one had serum disease. Nitulescu states that continental experimenters are administering vitamin C also to overcome intolerance to arsphenamine. They state that by adding from 0.05 to 0.1 Gm. of ascorbic acid to the arsphenamine solution one can administer it to persons who otherwise could not bear it at all. They applied vitamin C orally too but the result was not satisfactory.

Hastening Healing After Operations

Dr. Campeanu, lecturer at the University of Bucharest, who is well known beyond the boundaries of Rumania, has methodically diminished the time spent in bed by surgical patients and at present he puts his patients on their feet directly from the operating table. During the period 1934-1938 3,150 laparotomized patients left their beds on the day following the operation. They did not experience any disadvantage that might have been caused by the early rising. Occasionally a patient observed some vertigo, but this may be observed also in patients kept in bed for the usual longer period. Encouraged by the experiences gained with the 3,150 patients, Campeanu went further and since Jan. 11, 1937, patients operated on under local anesthesia have been put on their feet directly from the operating table, whatever the operation may have been. Every patient was instructed to behave just like any other convalescent patient. They dressed themselves or with the help of a nurse. They went alone to the ward or to the hospital grounds and walked up or downstairs. Some of them walk in the park after the operation; others read books or listen to the radio. There are patients who take gymnastics, but there are also some who on reaching the ward take a rest in bed.

On the second day after operation patients who have been operated on under general or spinal anesthesia are similarly dealt with. Patients operated on for appendicitis or hernia, if living in Brasov, where Dr. Campeanu operates, are dismissed from the hospital on the third or fourth day, those from the country on the fourth or fifth day. They return on the seventh or eighth day for the removal of the sutures. In none of the 1,300 patients were there any complications which could have been the result of early rising. On the contrary, the patients remained free from such complications as pulmonary congestion or thrombophlebitis. All authors who have experimented with getting their patients out of bed early have found that motion is the means which prevents stasis. Campeanu says that motion promotes leukocytosis and that getting up immediately is a psychic as well as a physical stimulant, which curtails the duration of the disability. An assistant of Campeanu whose appendix had been removed, after having stepped down from the operating table, forthwith acted as assistant at the next operation and afterward walked about. His recovery was prompt. By shortening the stay of patients in the hospital, the surgical section of Campeanu's clinic in Brasov were able with the same number of beds to accommodate 500 more patients than in the previous year. This new method is of inestimable advantage in time of war. The evacuation of war

hospitals thus becomes simplified. Contraindications for such early rising are general debility of a major degree, high fever, serious complications on the part of other organs, and abdominal drainage. Of the 1,300 patients, three died: one of a perforated duodenal ulcer on the thirty-fifth day after operation caused by general peritonitis; one of pulmonary cancer well after the operation, as a result of hemoptysis from a mediastinal blood vessel; the third on the fourth day after unsuccessful decapsulation of the kidney from anuria due to mercury poisoning.

In Memory of the Late Professor Babes

On May 6, 1888, in Rumania the first antirabic injection was given to a patient bitten by a dog suspected of being infected with rabies. The physicians of the country celebrated, amid great solemnities, the memory of the founder of the Bucharest antirabic institute, Dr. Victor Babes, whose name is internationally known. The arranging committee gave a scientific character to the festivities by having lectures relating to the present status of the problem of rabies. The festivities were held in the Bucharest Babes institute. The committee on arrangements was headed by Professors Marinescu and Balacescu. Professor Babes, who was born in 1854, studied medicine in Vienna and worked in the clinics of Langer and Rokitanski, on whose recommendation he was appointed assistant at the Budapest anatomicopathologic institute from 1872 to 1888. In 1881 he was appointed lecturer on pathologic histology. Then he went abroad and worked with Professor Ziemssen of Munich, Arnold of Heidelberg, Recklinghausen and Waldeyer of Strasbourg, Koch and Virchow of Berlin and Pasteur and Cornil of Paris. In the latter's clinic in Paris, in conjunction with Professor Cornil, Babes edited the first textbook of bacteriology under the title *The Bacteria*. Professor Cornil recommended Babes to a professorship at Bucharest university, to which he was invited in 1888. In that year the legislative corporation voted a special law which accorded the necessary sum for the foundation and erection of a pathologic and bacteriologic institute, which was opened under the direction of Babes in 1889. This institute also served for teaching experimental pathology, bacteriology and pathologic anatomy. He wrote about 700 treatises. His greatest works are *Atlas der pathologischen Histologie des Nervensystems* (Berlin, 1892), *Traité de la rage* (1912) and *Original Researches on Pellagra in Rumania* (1915).

Marriages

LEE EDWARD PARMLEY, Big Spring, Texas, to Miss Thelma Lowery of Winter Haven, Fla., in Fort Worth, February 24.

FRANK ALBERTUS MOORE BRYANT, Bronxville, N. Y., to Miss Janice James of Beverly Hills, Calif., April 22.

EDMUND S. LOCKHART, Nokomis, Ill., to Miss Wilma V. Showers Reiser of East St. Louis, March 1.

JOSEPH HALFORD PATTERSON, Broadway, N. C., to Miss Gaynelle Seawell of Greensboro, March 5.

THOMAS MORTON RAINES, Wakefield, Va., to Miss Alice Virginia Hill of Dendron, February 24.

HOWARD C. RUFUS, Ann Arbor, Mich., to Miss Hilda Myers of Lancaster, Pa., February 28.

HOMER DAVID HICKEY to Miss Marguerite Eilene Bacon, both of Chattanooga, Tenn., recently.

MORRIS B. PAYNTER, Southport, Ind., to Miss Mabel Kearns of Plainfield, February 2.

EARL WILLIAM ROLES to Miss Nannie Evans, both of East Orange, N. J., April 14.

WILBUR E. BURNETT to Miss Peyton Bolling Jones, both of Philadelphia, May 24.

CLAIR G. SPANGLER to Miss Lillian Slater, both of Reading, Pa., April 19.

Deaths

Ellis Fischel ☉ St. Louis; Washington University School of Medicine, St. Louis, 1908; associate professor of clinical surgery at his alma mater and formerly associate professor of surgery at the St. Louis University School of Medicine; chairman of the state cancer commission; member of the Southern Surgical Association and the American Radium Society; fellow of the American College of Surgeons; at various times on the staffs of St. Mary's, DePaul, Barnard Free Skin and Cancer, Jewish and St. Luke's hospitals; aged 54; was killed, May 14, in an automobile accident.

Edward Frost Parker ☉ Charleston, S. C.; Medical College of the State of South Carolina, Charleston, 1889; an Affiliate Fellow of the American Medical Association; past president of the South Carolina Medical Association; professor emeritus of ophthalmology and otolaryngology and formerly dean at his alma mater; served on the medical advisory board during the World War; fellow of the American College of Surgeons; aged 70; died, March 28, of cerebral arteriosclerosis and chronic myocarditis.

Edward Josiah Brown ☉ Minneapolis; Dartmouth Medical School, Hanover, N. H., 1879; an Affiliate Fellow of the American Medical Association; member of the American Academy of Ophthalmology and Oto-Laryngology; past president of the Hennepin County Medical Society; formerly member of the city and state boards of health; aged 87; died, March 15, of cardiac decompensation and arteriosclerosis.

Joseph Walter Mills, Owensville, Mo.; National University of Arts and Sciences Medical Department, St. Louis, 1913; member of the Missouri State Medical Association; county health officer; member of the city board of health; aged 56; died, March 1, in the Missouri Baptist Hospital, St. Louis, of edema of the lungs and postoperative hernia.

Charles Henry Leonard, Providence, R. I.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1868; member of the Rhode Island Medical Society; Civil War veteran; for many years in charge of vaccination of the city health department; aged 95; died, March 19, of arteriosclerotic heart disease.

John Ross Mitchell ☉ Joliet, Ill.; Northwestern University Medical School, Chicago, 1916; member of the Clinical Orthopedic Society, American Academy of Orthopedic Surgeons and the Radiological Society of North America; aged 50; died, March 17, in St. Joseph's Hospital, of diabetes mellitus and bronchopneumonia.

Frederick Herrick Aldrich, Belview, Minn.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; formerly member of the state legislature, mayor and postmaster; served during the World War; aged 66; died in March of myocarditis, diabetes mellitus and streptococcal infection.

Stanley Edward Stroube, Livermore, Calif.; University of Tennessee College of Medicine, Memphis, 1914; fellow of the American College of Surgeons; served during the World War; on the staff of the Veterans Administration Facility; aged 46; was found dead, March 21, of carbon monoxide poisoning, self administered.

Duncan MacCalman, Baltimore; Baltimore Medical College, 1895; served during the World War; formerly connected with the U. S. Veterans Bureau; aged 73; associated from 1895 to 1901, and superintendent from 1898 to 1900 of the Maryland General Hospital, where he died, March 14, of carcinoma of the colon.

John Alexander Robinson ☉ New York; University and Bellevue Hospital Medical College, New York, 1899; member of the American Laryngological, Rhinological and Otolological Society and the American Otolological Society; on the staff of the New York Eye and Ear Infirmary; aged 61; died, March 24.

Wallace Nelson Brown, Watertown, N. Y.; University of Vermont College of Medicine, Burlington, 1890; Bellevue Hospital Medical College, New York, 1892; aged 72; died, March 17, in the St. Lawrence State Hospital, Ogdensburg, following a prostatectomy, of chronic myocarditis and arteriosclerosis.

Willoughby Carr Pendill, Huntington, N. Y.; Syracuse University College of Medicine, 1913; member of the Medical Society of the State of New York; served during the World War; formerly on the staff of the Huntington Hospital; aged 49; died, March 13, in Yuma, Ariz., of angina pectoris.

Charles Samuel McIntyre, Hastings, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1896; member of the Michigan State Medical Society; on the staff of the Pennock Hospital; aged 68; died, March 2, in West Palm Beach, Fla., of coronary thrombosis.

Ira Mesick Garrison, East Greenbush, N. Y.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1876; for many years health officer of East Greenbush and Schodack; aged 82; died, March 29, in St. Peter's Hospital, Albany, of pernicious anemia and uremia.

Le Verne Holmes, Manchester, Conn.; Boston University School of Medicine, 1904; veteran of the Spanish-American and World wars; served on the staff of the Manchester Memorial Hospital in various capacities; aged 58; died, March 26, in Scarsdale, N. Y., of coronary occlusion.

Benjamin Arnauld Smillie, Gilmore City, Iowa; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1903; member of the Iowa State Medical Society; secretary of the Pocahontas County Medical Society; aged 68; died, March 7, of coronary embolism.

Wayne McKnight Shirley, Carroll, Iowa; Rush Medical College, Chicago, 1905; served during the World War; past president and secretary of the Carroll County Medical Society; health officer; on the staff of St. Anthony Hospital; aged 57; was found dead, March 20.

John Winford Stevens, Nashville, Tenn.; University of Nashville Medical Department, 1900; member of the American Psychiatric Association; owner of the City View Sanitarium; aged 58; died, March 18, in St. Thomas Hospital of carcinoma of the colon.

William Whitfield White, Houlton, Maine; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1874; Jefferson Medical College of Philadelphia, 1878; member of the Maine Medical Association; aged 87; died, March 6, of pneumonia.

Carl Lorraine McCallum, Sapulpa, Okla.; University of Nashville (Tenn.) Medical Department, 1895; member of the Oklahoma State Medical Association; past president of the Creek County Medical Society; aged 59; died in March of septicemia.

Charles Joseph McGurren, Devils Lake, N. D.; Minneapolis College of Physicians and Surgeons, 1904; formerly secretary of the state board of health; on the staff of the Mercy Hospital; aged 64; died, March 11, of carcinoma of the sigmoid and liver.

Anthony Joseph Thomas, Easton, Pa.; Georgetown University School of Medicine, Washington, D. C., 1935; aged 30; died, March 12, in the Newark (N. J.) Eye, Ear and Nose Hospital of streptococcal meningitis, chronic mastoiditis and otitis media.

Peter Albert Sundbury, Holdrege, Neb.; Keokuk (Iowa) Medical College, 1894; past president and secretary of the Phelps County Medical Society; on the staff of the Holdrege Hospital; aged 71; died, March 17, of chronic nephritis and arteriosclerosis.

Homer Francis Peirson, Austin, Minn.; Rush Medical College, Chicago, 1895; past president of the Mower County Medical Society; for many years county coroner; aged 71; died, March 24, in St. Olaf Lutheran Hospital of cerebral hemorrhage.

Clarence S. Beals, Wyoming, N. Y.; University of Buffalo School of Medicine, 1903; health officer of the town of Middlebury and the village of Wyoming; aged 59; died, March 20, of chronic myocarditis, arteriosclerosis and chronic nephritis.

Charles Ignatius Proben, New York; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1890; Bellevue Hospital Medical College, New York, 1890; aged 74; died, March 21, of heart disease.

Garfield Ray Salsberry, Lyons, Ohio; Detroit College of Medicine, 1903; member of the Ohio State Medical Association; member and past president of the county board of education; aged 58; died, March 23, in an automobile accident.

John Nelson Tector, Englewood, N. J.; Bellevue Hospital Medical College, New York, 1892; served during the World War; formerly on the staff of the Englewood Hospital; aged 67; died, March 5, of coronary occlusion.

Emory James Rhoades, Walla Walla, Wash.; University of Colorado School of Medicine, Denver, 1911; served during the World War; aged 54; died in March at a local hospital following an operation for gallstones.

George Corlett Radcliffe, Peninsula, Ohio; Cleveland Homeopathic Medical College, 1898; Medical Department of Ohio Wesleyan University, Cleveland, 1901; aged 63; died, March 22, of cerebral thrombosis.

Charles Kirtland Stillman, Mystic, Conn.; Columbia University College of Physicians and Surgeons, New York, 1904; served during the World War; aged 58; died, March 22, of pulmonary tuberculosis.

William V. Russell, Dalton, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1909; also justice of the peace; aged 68; died in March in the Hamilton Memorial Hospital of pneumonia.

S. I. Sturges, Azle, Texas; University of Tennessee Medical Department, Nashville, 1893; aged 69; died, March 21, in a hospital at Fort Worth of cerebral thrombosis, hemiplegia and bronchopneumonia.

Lillis Adora Wood Starr, Los Angeles; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1891; aged 72; died, March 4, of injuries received in an automobile accident.

Ralston William Sleeter, Medford, Ore.; State University of Iowa College of Medicine, Iowa City, 1909; member of the Oregon State Medical Society; aged 55; died, March 9, of coronary disease.

Charles Basil Murray, New York; Bellevue Hospital Medical College, New York, 1887; member of the Medical Society of the State of New York; aged 74; died, March 30, of myocarditis.

William Wesley Earles, Seattle; Milwaukee Medical College, 1910; member of the Washington State Medical Association; aged 54; died, March 5, at Rochester, Minn., of hypertension.

Clarence Rupert Morss, Zumbrota, Minn.; University of Pennsylvania Department of Medicine, Philadelphia, 1908; aged 57; died, March 23, in Rochester, Minn., of carcinoma of the lung.

James B. Smith, Dunlap, Tenn.; University of Nashville Medical Department, 1896; aged 65; died, March 28, in the Pine Breeze Sanatorium, Chattanooga, of tuberculosis of the kidneys.

Charles Roscoe Smith, Livermore Falls, Maine; Medical School of Maine, Portland, 1897; member of the school board; aged 72; died, March 21, of carcinoma of the brain and left lung.

Nathan Ryno Smith, Baltimore; University of Maryland School of Medicine, Baltimore, 1886; member of the Society of American Bacteriologists; aged 74; died, March 30, of erysipelas.

M. H. Proudfoot, Rowlesburg, W. Va.; Starling Medical College, Columbus, 1884; formerly member of the state board of health; aged 77; died, March 21, of cerebral embolism.

Anna M. Jack, New Castle, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1897; aged 67; died, March 15, at Greenville, Tenn., of sclerotic cardiovascular disease.

Peyton Stark Lewis, Richmond, Va.; Medical College of Virginia, Richmond, 1919; member of the Medical Society of Virginia; aged 48; died, March 9, of myocarditis.

Philip Henry Berlenbach, Richmond Hill, N. Y.; Long Island College Hospital, Brooklyn, 1891; aged 75; died, March 23, in the Mary Immaculate Hospital, Jamaica.

Nicholson Few Curtis, Dobbs Ferry, N. Y.; Western Reserve University Medical Department, Cleveland, 1912; aged 53; died, March 20, of cerebral hemorrhage.

Iver Stoland, Eau Claire, Wis.; Rush Medical College, Chicago, 1911; served during the World War; aged 53; died, March 8, of a self-inflicted bullet wound.

Joseph Amedce Girouard, Lewiston, Maine; School of Medicine and Surgery of Montreal, Canada, 1889; aged 74; died, March 1, of carcinoma of the stomach.

J. Webb McGehee, Baton Rouge, La.; Tulane University of Louisiana Medical Department, New Orleans, 1900; aged 62; died, March 8, of angina pectoris.

James H. Hylton, Table Rock, Neb.; Lincoln Medical College of Coter University, 1903; aged 66; died, March 2, at Elmwood of obstructive biliary cirrhosis.

William F. Ashley, Shaw, Miss.; Tulane University of Louisiana Medical Department, New Orleans, 1901; aged 72; died, March 22, of cardiorenal disease.

Emerson Sumers Porter, Columbus, Ohio; University Medical College of Kansas City, Mo., 1895; aged 67; died, March 8, of coronary occlusion.

William Lovett, Detroit; McGill University Faculty of Medicine, Montreal, Que., Canada, 1870; aged 85; died, March 19, of arteriosclerosis.

Sollis Runnels, Indianapolis; Chicago Homeopathic Medical College, 1887; aged 83; died, March 13, of angina pectoris.

Paul E. Redd, Richmond, Va.; Medical College of Virginia, Richmond, 1895; aged 65; died, March 27, of myocarditis.

Correspondence

THE USE OF ZINC SULFATE SOLUTION FOR THE PREVENTION OF POLIO- MYELITIS IN MAN

To the Editor:—In THE JOURNAL a year ago (June 26, 1937, p. 2182) we reported that 1 per cent zinc sulfate solution thoroughly applied to the olfactory mucosa in monkeys affords a high degree of protection against poliomyelitis virus instilled intranasally a month later. Because susceptibility returned in most of the monkeys when they were retested some months later, and the anosmia following the application of zinc sulfate solution in man seemed to be only of temporary duration (Peet, M. M.; Echols, D. H., and Richter, H. J.: The Chemical Prophylaxis for Poliomyelitis, THE JOURNAL, June 26, 1937, p. 2184), we suggested a field test to determine the value of this solution in preventing the disease in man. Opportunities to carry out such tests appeared a few months later in several eastern cities. The results of one of these has been recently reported (Tisdall and others: *Canad. Pub. Health J.* 28:523 [Nov.] 1937). It is not our purpose to comment on the results of this test except to say that we believe the authors do not in any way answer the important practical question whether zinc sulfate solution properly applied is of value in preventing the disease in man. Our chief reason for regarding this test as uninformative on this point is the fact that the figures given indicate that probably not more than 14 per cent of those sprayed were actually treated thoroughly enough to cover all of the olfactory area. From the observations of Peet, Echols and Richter, of Pentecost (*Canad. Pub. Health J.* 28:493 [Oct.] 1937) and of Hayden (*M. Clin. North America*, January 1938), which show that anosmia almost always follows a thorough application of zinc sulfate, it would appear that about 85 per cent of those sprayed in the Toronto test were not treated thoroughly enough to cover all of the olfactory area. We believe that this failure can be laid largely to the difficulties which attend the effective use of the special atomizer suggested by Peet, Echols and Richter. A simpler and probably more efficient method of covering the olfactory area has since been suggested by Shahinian, Bacher, McNaught and Newell (THE JOURNAL, April 16, p. 1254). Our purpose in this communication, however, is not so much to deal with the technic of applying the solution as to point out an important risk attending the application of zinc sulfate solution to the olfactory area.

To obtain protection the solution should probably be applied thoroughly enough to induce a temporary anosmia, and to maintain such resistance as may be afforded the application should probably be repeated as soon as the sense of smell returns. But while anosmia is probably an important index of sufficiently thorough treatment and the persistence of anosmia possibly evidence of continued resistance, no one wants such a functional effect to be lasting. While in children the sense of smell seems always to return within a few weeks, in adults it may be much longer in returning. We know of a few cases in adults in whom this function did not return until after periods of from two to four months. What is especially important is that recently we have learned of several cases in adults in whom the sense of smell has not yet returned after a period of more than six months. We do not know of any cases of lasting anosmia in children.

In adults the pain that immediately follows the application of the solution is apt to be more severe and of longer duration than in children. We believe that both the severity of the immediate reaction and the duration of the anosmia may be based on certain anatomic differences which influence the length of time the chemical may act on the olfactory mucosa. We understand that in adults the superior common nasal meatus tends to be much narrower and deeper than in children. A

very narrow cleftlike meatus would tend to hold solutions by capillary attraction. Such retention would naturally result in a more prolonged and uncontrolled drug action, resulting in more intense and prolonged pain and a more profound injury to the olfactory mucosa. These considerations, together with our recent observation that in some monkeys there is a rather severe exudative inflammation of the olfactory mucosa, associated with desquamation of epithelial cells, especially in animals examined from one to two days after treatment with 1.5 per cent zinc sulfate solution, prompts us to sound a word of caution against the further use of zinc sulfate in man until more is known about the mechanism underlying the protection in monkeys; also about the risk of inducing permanent anosmia in man.

The fact that susceptibility in monkeys generally returns after several months and the fact that children generally regain the sense of smell within two weeks seems to show that a 1 per cent solution of zinc sulfate (U. S. P.) can be applied to many persons without much risk of producing permanent anosmia. At the same time it is clear that this risk does exist and that it is greater in adults. It may prove greater in children than experience thus far seems to indicate if the induction of anosmia is made a criterion of successful treatment and theoretically an index of the duration of the protection afforded by zinc sulfate solution.

The risk of inducing a lasting anosmia may possibly be reduced if the zinc sulfate solution is followed within a few minutes by drops of physiologic solution of sodium chloride instilled by the Shahinian method. This would have the effect of reducing the length of time that a full strength solution of zinc sulfate would be permitted to act, should it tend to be held by capillary attraction in the superior common nasal meatus. At any rate the treatments should never be repeated more than necessary to induce and maintain anosmia nor should they be carried out with solutions containing more than 1 per cent zinc sulfate (U. S. P.). The use of local anesthetics should probably be avoided.

We shall appreciate greatly additional information bearing on the duration of the anosmia in man following the application of zinc sulfate solution. Such information will help us in answering the many inquiries that come to us. While we are continuing investigations on the mechanism of chemically induced resistance in monkeys, we appreciate that the full answer as to the practicability of such a measure cannot be obtained from experimental observations in animals. We wish therefore to urge physicians to transmit to us their individual experiences.

E. W. SCHULTZ, M.D.
L. P. GEBHARDT, PH.D.
Stanford University, Calif.

Department of Bacteriology and
Experimental Pathology.

THE DOSAGE OF ANTITOXIN IN A CASE OF TETANUS

To the Editor:—In THE JOURNAL April 16, page 1271, appeared a case report by Cables and West entitled "The Amount of Antitoxin Used in a Case of Tetanus." They report that 3,460,000 units of antitoxin was administered over a period of forty-one days. The authors state that "with the modern methods of preparation of tetanus antitoxin it is possible to give large amounts of it without serum sickness," and that it is best to continue serum administration as long as any increased tonus of muscles is present.

Such a course would result in unwarranted deaths in a disease that already has a high fatality rate.

For twelve years I have had supervision and management of all tetanus cases admitted to the Los Angeles County Hospital, which averages about twenty-five cases annually.

In a previous publication (Vener, H. I.; Bower, A. G., and McKillop, J. E.: *Clinical Tetanus, a Study of 131 Cases, California & West. Med.* 39:6 [Dec.] 1933) it was emphasized that "regardless of the age of the patient, the sex, the average incubation period, the etiological factor or the site of injury, or with the amount of antitoxin given as an initial dose up to 100,000 units, the fatality rate was at least 50 per cent. Furthermore, that the greatest number of deaths occurred within the first three days of hospitalization, and that if a patient could be kept alive for a period of nine days following admission the chances for recovery were 90 per cent in his favor."

The cost of the antitoxin must be given careful consideration. At the market price prevailing last summer, the approximate rate per hundred thousand units was \$50. As a result, approximately \$1,700 worth of serum was given when \$125 worth would have sufficed. At the current market price, the cost of the antitoxin has been reduced, on an average, about one third.

During the past thirty-four months I have instituted at the Los Angeles County Hospital a regimen of management, with certain modifications, for the treatment of clinical cases of tetanus and have published a preliminary report (*Treatment of Tetanus, California & West. Med.* 48:3 [March] 1938). According to this report, and up to April 1, 1938, I have supervised a consecutive series of seventy-five cases, with twenty deaths, a gross fatality rate of 26.6 per cent. This contrast is rather significant when compared with the death rate prior to the current study of approximately 52 per cent. The lowered fatality rate included some patients who died within a very short period of admission, and in several instances they did not receive any antitoxin. Crediting as hospital deaths the nine cases in which death occurred within the first twenty-four hours of admission, there was a series of sixty-six cases with eleven deaths, a net fatality rate of 16.6 per cent. I advocate that, as soon as a diagnosis of tetanus is made, the case be considered as a surgical emergency and immediate treatment instituted.

Cables and West stress the fact that serum sickness appeared about nineteen days after admission, but still they continued to give antitoxin. This administration of serum as cited, for a period of nearly six weeks, should be condemned. In my experience the average hospital stay of a patient has been about three weeks. The total dosage of antitoxin administered, exclusive of the desensitizing doses, is 200,000 units per case.

In our present series, despite the refinement in preparation of antitoxin, and all precautions as to sensitivity tests, serum sickness has occurred, approximately, in 35 per cent of the cases. Serum sickness frequently accentuates the irritability of the patient and the spasticity of the muscles. Experience has demonstrated that such a condition is not due to a relapse. I feel that it is not necessary to continue serum therapy as long as the patient has spasms. This condition may often continue for two or three weeks and occasionally a little longer, but it is not an indication for continued therapy. Titration studies on the blood (Spooner, E. T. C., and Cole, Leslie: *The Treatment of Tetanus, with Observations on the Fate of Injected Antitoxin, Quart. J. Med.* 4:295 [July] 1935), following the intravenous administration of 200,000 units as a single dose, revealed that the antitoxin disappeared rather rapidly at first and then more slowly. However, at the end of seven days there still remained about 10 units of antitoxin per cubic centimeter and at the end of fourteen days there was from 3 to 5 units of antitoxin per cubic centimeter of blood.

HYMAN I. VENER, M.D., C.P.H., Los Angeles.
Assistant Epidemiologist, Los Angeles
City Health Department.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

INTRADERMAL TREATMENT IN HAY FEVER

To the Editor:—What evidence is there that the intradermal method of treating hay fever by means of extracts of timothy pollen is as efficacious as the usual subcutaneous route? M.D., New York.

ANSWER.—Injections for hay fever are given either preseasonally, coseasonally or perennially. Preseasonal injections are usually given subcutaneously; in the perennial method, according to which injections are given all the year round, the subcutaneous method is likewise in general use. However, in the coseasonal method, in which injections are given during the hay fever season, the intradermal (intracutaneous) technic is employed by many. Vaughan in 1923 advocated subcutaneous injections during the season; but Phillips in 1926 and again in 1933 advised intradermal pollen therapy during the attack. Phillips reported 91 per cent satisfactory results in 322 patients who were given low dosages of appropriate pollen extracts intracutaneously. The maximum amount injected was 0.17 cc.; if more was injected the dose was divided. Permanent scars were thus avoided. Phillips pointed out that glycerin extracts, especially if concentrated, tend to be painful and to leave scars. Phillips had twelve general reactions in this series. His patients were given extracts of the pollens of Bermuda grass, careless weed, Russian thistle and others.

Thommen is strongly in favor of the intradermal method for coseasonal treatment. He points out, however, that only small amounts can be used with safety. Unger and Moore brought out a new extracting fluid consisting of 5 per cent dextrose with 0.5 per cent phenol; this is not irritating and is especially valuable in intradermal therapy.

Rackemann and others have shown definitely that intradermal injections of pollen extracts give much larger local reactions and are much more likely to cause constitutional symptoms than equal doses given subcutaneously. The epithelial tissues seem to have much more histamine or a histamine-like substance than the mesenchymal subcutaneous tissue; this histamine substance seems to be important in initiating allergic reactions.

It must be added that many other men have not found good results by either subcutaneous or intradermal treatment during the hay fever season. Most still prefer the preseasonal method, and the perennial method is becoming more and more popular.

HUMAN ANTITYPHOID SERUM UNDESIRABLE— PREPARATION OF RABBIT ANTITYPHOID SERUM

To the Editor:—Will serum made in the human body be all right for antityphoid agglutination work? How much vaccine should be given? At what titer must the serum be? What are the chances of getting a typhoid infection with a high titer? What technic should be used for building up a sufficient titer in the rabbit?

HUGH EARLE, Fulton, Ky.

ANSWER.—Antityphoid serum from human sources is not desirable for use in identifying unknown organisms. Chief among the objections to its use are the facts that: (a) The patient may have had a mild case of paratyphoid fever or may have been inoculated with T. A. B. or T. A. B. C. vaccine in the past and the injection of typhoid vaccine will raise the paratyphoid antibody titer, resulting in a serum containing mixed antibodies. (b) Some human beings fail to develop H (flagellar) agglutinins in response to infection or inoculation. The antiserum would therefore contain only O (somatic) agglutinins. H agglutination is commonly used for the differentiation of types of enteric organisms. *Bacillus typhi* and *B. enteritidis*, for example, have the same somatic antigen. (c) Somatic agglutinins produced in human beings fail to show the specificity that rabbit serums show and that might be expected from the known antigenic structure of the typhoid and paratyphoid bacilli. (d) High titers, i. e., 1:1,000 or more, are not commonly found in human serums. For these and other reasons, human antityphoid serums are of doubtful quality.

The agglutinin titer of serums from typhoid patients varies not only with individuals but with the day of the disease on

which the specimen is taken. It is reasonable to conclude from recorded data that the great majority of typhoid infections will, during the third week, show an H titer of 1:200 and an O titer of 1:100 or better. Titers of 1:650 are not uncommon and titers of 1:1,000 may be regarded as exceptionally high.

Antiserums may be prepared in rabbits by the inoculation of twenty-four hour cultures of living motile typhoid bacilli. The suspension is ordinarily prepared by washing up the growth on agar with sterile saline solution and adjusting to a concentration of approximately 500 million per cubic centimeter. The following inoculation procedure has been found satisfactory: 0.5 cc. intraperitoneally, 1 cc. intraperitoneally, 0.5 cc. intravenously, 1 cc. intravenously, 2 cc. intravenously. The injections are made at five day intervals if the animal does not lose weight. If weight is lost, it is best to repeat the immediately preceding injection and then continue as before. Five days after the last injection a small amount of blood is removed from the ear for testing. If the titer is satisfactory the animal is exsanguinated from the heart. Such a serum should have a titer of 1:5,000 or better. It will contain both H and O agglutinins. Monospecific O antiserums may be prepared by growing the typhoid bacilli on phenol (1:1,000) agar. Monospecific H antiserums may be prepared by absorbing the mixed antibody serum with O antigen, i. e., bacilli grown on phenol agar, and leaving only the H agglutinins remaining.

PRECOCIOUS DEVELOPMENT IN CHILD AFTER ESTROGENIC TREATMENT FOR GONORRHEA

To the Editor:—A girl, aged 5, was infected with gonorrhea when she was 3. She was treated by a child specialist for one year with theelin, 1,000 units weekly. The family then moved to another city and, the child being still infected, she was given amniotin and vaginal treatment and has had that for a year now. She was recently brought to me, with the smear still positive and with definite signs of precocious development of the breasts and a slight pubic growth of hair. Could this development be from the long continued use of the endocrine treatment or is it something else? I have changed my method of treating childhood gonorrhea but would appreciate any information you would give me concerning this case.

J. O. HAMPTON, M.D., Blackfoot, Idaho.

ANSWER:—The treatment of gonorrheal vaginitis in the child before puberty has always been recognized as difficult and unsatisfactory. It is known that, in the immature girl, gonorrheal infection is limited to the vaginal mucous membrane and seldom involves the undeveloped accessory glands of the cervix. It is also known that in the adult woman gonorrhea rarely involves the vaginal mucous membrane and, if present, is of short duration.

The reason for these differences in localization is that in children the vaginal mucous membrane is thin and delicate, consisting of from four to eight layers of epithelial cells, with many rugae or folds. Gonococci flourish on this delicate mucous surface and eventually penetrate into the subepithelial spaces, where they become resistant to local treatment.

Edgar Allen (*J. Morphol.* 46:479 [Dec. 5] 1928) demonstrated that estrogen administered to immature monkeys increased the number of vaginal epithelial layers with cornification of the surface epithelium, a condition characteristic of the adult vaginal mucosa.

R. M. Lewis (*Am. J. Obst. & Gynec.* 26:593 [Oct.] 1933) reasoned that, if he could change the immature vaginal epithelium of the child to the adult type by the use of estrogen, he could eliminate the gonococcal infection. That this can be done has been proved many times, and it forms the basis for the estrogenic treatment of gonorrheal vaginitis in children.

Lewis and Adler (*THE JOURNAL*, June 13, 1936, p. 2054) thought originally that the mere histologic change involved in temporarily converting the thin vaginal mucosa of the child to the far thicker and partly cornified structure of the adult adequately explained the destruction of the invading gonococci. Further studies have convinced them that the curative result is in all likelihood due not to the histologic change alone but to a striking change in the reaction of the vaginal secretions. The nearly neutral reaction, normal in childhood, changes to acidity, which always accompanies temporary maturation of the mucosa.

It is the present belief that the treatment of gonorrheal vaginitis in children by the use of estrogenic vaginal suppositories is more effective than is the intramuscular administration of estrogen.

It is stated that "the child was given 1,000 units of theelin weekly for one year." The method of administration is not described. This was later followed by amniotin suppositories for one year. The frequency of treatment and the amount used is again not stated. The vaginal smears are still positive for

gonococci and the child has definite signs of precocious development of the breasts and a slight growth of pubic hair.

The child has had more than sufficient theelin to produce development of the adult type of vaginal mucosa with cornification of the epithelial layer, if it has been properly administered with regard to time and concentration. The evidences of precocious development are almost surely due to the prolonged administration of estrogen. With this patient it was correct and justifiable to discontinue the estrogen.

It seems best in this case to use nonestrogenic treatment now. Sulfanilamide might be tried. If other measures fail, perhaps after six months estrogen suppositories (1,000 international units) inserted each night for thirty days might again be tried. Smears should be examined to check success or failure.

FAMILIAL PERIODIC PARALYSIS

To the Editor:—About five years ago a man on lying down in bed, especially if he was to lie on his back, would at times hear a roaring in his ears, which was accompanied by absolute inability to move any muscles with the exception of his eye muscles and the muscles of his tongue. The feeling would wear away in a few seconds and entirely disappear. If during this time while the symptoms were present some one should lift his arm or shift his body in any way the symptoms would immediately cease. Physical examination and all laboratory reports were negative. Within the last three months two additional patients have complained of practically the same syndrome. One patient states that the syndrome is present in whatever position he lies and can be dissipated only if he is able to get his tongue between his teeth so that he can bite it. The other patient states that the syndrome comes on only as he is awakening from sleep. On awaking he finds himself unable to move. I am unable to account for this group of symptoms and any information that you can offer will be appreciated.

M.D., Massachusetts.

ANSWER:—Paralysis of the voluntary muscles coming on suddenly and disappearing with equal rapidity occurs characteristically in familial periodic paralysis, a rare disease, usually hereditary in character. Although most of the attacks begin in childhood, it is not uncommon for the onset to be delayed until the third decade of life. Often attacks occur early in the morning, just as the patient is awakening, although there may be prodromal symptoms the day before. Sweating often accompanies the paralysis, which reaches its maximum within a few minutes. The muscles supplied by the cranial nerves are not ordinarily affected. The tendon reflexes are lost during the attack, together with the electrical excitability of the muscles to both faradic and galvanic stimulation. There is a great variation in the frequency of the attacks, and patients are known to have attacks as often as every four or five days, particularly in winter.

The disease was described by Westphal and Oppenheim in 1885 and its hereditary character by Goldflam in the same year. The best recent account in English is by T. K. MacLachlan (*Brain* 55:47 [March] 1932). There is no treatment known which is effective either in preventing this disease or in shortening its course. It would be unusual for any physician to have two cases, both without hereditary factors. A further investigation is indicated along this line, as well as a more accurate description, particularly with regard to reflexes and electrical tests during a period of paralysis.

HOME SALTED PORK

To the Editor:—People of Italian extraction here are fond of preserved pork, which they preserve themselves from fresh pork. The meat is first salted for some time and then fresh salt and black pepper are added and the meat is wrapped up in waxed paper and kept in the cellar. While it is in the cellar a greenish mold develops almost invariably on the outside of the meat, which I don't see on the commercial type put out by the large packing concerns. Is there any danger from these molds? Could anything be added to the salt and pepper to prevent their formation, and if so what? Since this meat is eaten raw, how long a time should elapse, to be reasonably safe from trichinosis, before the meat is eaten? The meat is not ground but trimmed from so-called butts and sausage is made from the trimmings. The local name is "longetta," although other classes of Italian people refer to it as "capo-collo."

M.D., Pennsylvania.

ANSWER:—There is no evidence that the molds on this meat are dangerous to health. No safe material can be added to salt and pepper to prevent the formation of molds. The large commercial packing concerns make a product called capicola. The pork in this product is cured for twenty-five days in 3 per cent salt at from 36 to 38 F. It is then stuffed in casings and smoked for two days at 90 F., after which it is held for twenty-five days in a drying room at 52 F. Trichinella is not reported to survive this process. In answer to the third question, the home prepared meat could not be considered safe, since under the conditions mentioned Trichinella might survive for many weeks.

NUMOTIZINE AND PLASTERS IN RESPIRATORY DISEASE

To the Editor:—What is the value of medication applied in the form of ointments or plasters to the chest wall in upper respiratory infections, acute bronchitis and pneumonia? The chief constituents of such—judging by the odor—are guaiacol, oil of pine needles and menthol. Some are offered by reputedly ethical pharmaceutical houses; more of them are sold under a patent name (e. g., Numotizine) to the public. Is there sufficient absorption of guaiacol through the skin to make its use in this fashion justifiable? Do any of the other constituents exert a more favorable action when applied this way? Is there any action of medicaments of this description other than counterirritation? M.D., Illinois.

ANSWER.—Numotizine is the name applied to the preparation known for many years under the name "Pneumo-Phthisine." It is stated to contain guaiacol 2.6 parts, solution of formaldehyde 2.6 parts, quinine 2.6 parts, methyl salicylate 2.6 parts and creosote 13.02 parts in a glycerin and aluminum silicate (kaolin) base, to make 1,000 parts. From this formula it appears that the preparation is a clay poultice (similar to the cataplasm of kaolin of the National Formulary) to which has been added guaiacol, formaldehyde, quinine, methyl salicylate and creosote.

The Council on Pharmacy and Chemistry considered this preparation more than twenty-five years ago and declared it inadmissible to New and Nonofficial Remedies because the therapeutic claims that were made for it were considered unwarranted, exaggerated and absurd, because the label on the trade package constituted an indirect advertisement to the public and because the name "Pneumo-Phthisine" was not descriptive of the composition of the mixture. Although poultices are often employed for maintaining rubefaction of the chest in patients with bronchitis or bronchopneumonia, there appears to be no evidence that Numotizine is an efficient means of producing the systemic effects of the various drugs which it contains. Incidentally, the advertising matter for Numotizine that is in the Council's files contains no recommendation for the use of the product as a treatment for pneumonia.

EXCESSIVE LIBIDO IN MAN

To the Editor:—A man, aged 53, clever and successful in business, has always been so oversexed that he has as many as twelve orgasms during one intercourse. If he misses intercourse for more than three days he cannot do justice to his business, becomes nervous and always feels much better after intercourse. He has been suffering from hyperinsulinism for the past five years. He had a goiter (exophthalmic) removed twelve years ago and has taken thyroid extract ever since. When he takes too much his sex capability increases. He feels that at his age so much libido is dangerous to his health. What can be done for him? Would cauterization of the verumontanum be indicated? Would prostatectomy affect his business ability? M.D., Michigan.

ANSWER.—This is probably a mild form of satyriasis and in some cases, in which the verumontanum is enlarged and congested so that it continually touches and irritates the urethral mucous membrane, cauterization may effect a cure. Otherwise, no remedy has thus far been found to alleviate the condition, though at times large doses of bromides may help to reduce the sexual passion. Prostatectomy will have no influence on the condition and should be performed only when the usual urologic indications for the operation exist.

CONTROLS IN SCHICK AND DICK TESTS

To the Editor:—Please answer the following: 1. What is the significance of a positive Schick control test? 2. The significance of a positive Dick control test? 3. When the Schick test and Schick control are positive in patients who have never received active immunizations are these patients to be considered immune to diphtheria or should they receive a course of active immunization? 4. When the Dick test and Dick control are positive in patients who have never received active immunizations, are these patients to be considered immune to scarlet fever or should they receive a course of active immunization? 5. Will a positive Schick control test persist throughout the life of an individual? 6. Will a positive Dick control test persist throughout the life of an individual? In answering these questions kindly quote the source of information. M.D., New York.

ANSWER.—1. A positive Schick control test is said to indicate sensitivity to the nonspecific protein in the Schick test material rather than susceptibility to diphtheria toxin.

2. There is no routine Dick control test (Rhoads, P. S.: *Skin Tests and Immunizations Against Scarlet Fever and Diphtheria*, THE JOURNAL, July 18, 1931, p. 153).

3. It is much safer to disregard a positive control test when testing persons for the first time, because it will be found that many so-called pseudoreactions will have become negative after immunization. If on retest following an adequate immunizing course the control test is as large, as bright and as indurated as the test made with unheated toxin, it is probably safe to call the retest a pseudoreaction (personal communication from the Dicks).

4. The Dicks advise against the routine use of a control test because the protein in Dick material is minimal. Pseudoreactions are so rare that the use of heated toxin or diluted medium control solution would lead to considerable confusion. Rarely a control may be useful in retesting persons who still have positive Dick tests after receiving much more toxin than the regular series of doses. In such persons, if heated skin test solution or medium control gives a test as large, as bright and as indurated as one made with regular Dick toxin, the Dick reaction may be a false positive. Such reactions are extremely rare.

5. A positive Schick control test will not always persist throughout the life of an individual. Many disappear after active immunization.

6. See answer 2.

PLACENTAL BLOOD TRANSFUSION

To the Editor:—In the editorial in THE JOURNAL, April 2, on "A New Source of Blood in Transfusion," you gave the formula used by the Moscow Institute of Hematology for a preservative of placental blood. You do not mention in what quantities it is to be added to the blood. Please give me this information if available. Also please let me know where I can get more detailed information concerning this subject, especially concerning the use of this blood in malignant conditions.

EDWARD J. MARTONE, M.D., Brooklyn.

ANSWER.—The formula of the diluting fluid recommended by the Moscow Institute of Hematology is as follows:

Sodium citrate	5.00 Gm.
Sodium chloride	7.00 Gm.
Potassium chloride	0.20 Gm.
Magnesium sulfate	0.004 Gm.
Distilled water	1,000.00 cc.

Blood is diluted with an equal quantity of fluid. This diluting fluid has been tried at the Blood Preservation Laboratory of the Cook County Hospital, Chicago, and has not been found superior to 70 cc. of the 2.5 per cent sodium citrate in physiologic solution of sodium chloride, which has been found adequate for the prevention of clotting of 500 cc. of blood.

There is probably no special advantage in the employment of blood transfusion in the treatment of malignant conditions excepting to the extent to which it may make it possible to tide a person over an operation.

POSSIBLE CONVULSIONS FROM DIPHTHERIA TOXOID

To the Editor:—A girl, aged 6, seen in consultation was in severe tetanic convulsions a day after her second diphtheria toxoid injection and had a severe local reaction. The day of the injection she had fever. Two weeks previously she had received a burn but no other injuries. She had never had convulsions previously. She was treated by the family physician by a hot enema and chloroform and gradually relaxed after one hour of a convulsive state. I did not see her subsequently but heard that she had a high fever for a week and then recovered. No other symptoms developed. Physical examination at the time of the convulsions was negative. The convulsions appeared similar to those seen in tetanus. What is your opinion as to the cause of the convulsion? M.D., New Mexico.

ANSWER.—Although the possibility of tetanus infection associated with the burn might be considered, it does not seem to offer the correct explanation. The convulsions after the second dose of toxoid might be attributed to reaction, which was in the nature of an anaphylactic shock. Could not "the high fever for a week" be assigned to the "severe local reaction"? Severe local reactions after toxoid injections are not extremely rare. Constitutional reactions in older patients are fairly common.

PASSAGE OF TEST MEALS—INTESTINAL STASIS

To the Editor:—1. What is the normal length of time required for the passage of the barium sulfate meal through the gastro-intestinal tract? 2. Please discuss intestinal stasis and its treatment.

T. K. LEWIS, M.D., Birmingham, Ala.

ANSWER.—1. The time for passage of a barium sulfate meal through the gastro-intestinal tract will vary with the type of meal employed. A protein barium meal causes slight delay, a dextrose meal a moderate delay, and an olive oil meal a delay of about five hours. The times quoted below are for a standard water barium meal which consists of 5 ounces (150 Gm.) of barium sulfate and from 3 to 5 ounces (90 to 150 cc.) of water. The stomach empties in two hours and occasionally in from two and one-half to three hours, the small intestine in from two to four hours. Usually at four hours the head of the barium column enters the cecum, at the hepatic flexure of the colon in from six to seven hours, and at the splenic flexure in eight hours. Filling of the sigmoid is variable and may be between the ninth and the seventeenth hour. Usually at the

end of twelve hours the barium is evenly distributed from the cecum to the middle of the sigmoid. After twenty-four hours the largest part of the barium has reached the lower sigmoid and rectum and is evacuated.

2. This question is vague. Stasis may be acute or chronic and involve the small or large bowel or both. As the reply would be lengthy, reference should be made to Bassler's "Disease of the Intestines and Lower Alimentary Tract." It contains an excellent chapter on intestinal stasis in all its phases.

TAPEWORMS IN FISH—EFFECT OF KIPPERING AND SMOKING

To the Editor:—Have any of the fish of the state of Washington been known to harbor fish tapeworm? If so, does kippering and smoking kill these parasites?

M.D., Washington.

ANSWER.—No authentic record is known of the occurrence in the flesh of the fish of the state of Washington of the bladder worm or larval stages of the fish tapeworm, *Dipyllobothrium latum*, of man. However, a larval stage of an unknown fish tapeworm does occur in the flesh of trout and landlocked salmon in Washington, but the adult stage of this worm probably occurs normally in some fish-eating wild mammal. The process of kippering as ordinarily used does not kill the larval stages of the fish tapeworm in the flesh of the fish. It is reported that saturated brine applied for more than a month will destroy the larvae, provided the flesh is completely permeated by the brine. Larger fish and those with skins on are less readily penetrated than smaller ones. Smoking of fish as ordinarily carried on does not destroy the infective bladder worms in the flesh of the fish. The process of hot smoking if carried on for an hour or more at 75 C. is reported to destroy these larval stages.

BLADDER INJURY AFTER HYSTERECTOMY

To the Editor:—What may cause the bladder wall to become thin like tissue paper? Can you furnish any statistics on the percentage of bladder injuries following complete hysterectomies in the presence of so-called pus tubes?

M.D., Alabama.

ANSWER.—It is difficult to offer any explanation as to the thinning out of the bladder wall. Unfortunately it is impossible to quote any statistics regarding the percentage of bladder and ureteral injuries following complete hysterectomies. This is a subject that would be of great interest to the surgeon and should be reported in order that the newer generation of surgeons may appreciate the need for care as regards the ureters when doing pelvic surgery. It seems certain that these injuries do take place far more often than is usually recognized.

NO RELATION BETWEEN GARTERS AND CORONARY DISEASE

To the Editor:—There is a rumor that the wearing of men's garters will predispose to circulatory disturbances and in time lead to coronary trouble. I have never seen any evidence to support such a rumor. Is there anything in medical literature that shows a causal relationship between the wearing of men's garters and the disturbances I have mentioned?

WILLIAM J. TANNENBAUM, M.D., Chicago.

ANSWER.—No evidence has been obtained nor any reports found in the literature that the wearing of men's circular adjustable garters predisposes to coronary disease. If in a nonadjustable garter the pressure was great and distributed over a narrow area, the venous pressure distal to the constriction would be increased and there might be an aggravation of pre-existing varicose veins.

DANGERS OF INTRAVENOUS THERAPY

To the Editor:—Dr. Joseph K. Narat's comment on page 1387 of THE JOURNAL, April 23, regarding the possibility of harm in the indiscriminate use of vitamin B₁ preparations (thiamin chloride) ought also to call for a comment on the indiscriminate use of the intravenous method of administration. The spectacularity of the intravenous route seems to be so fascinating that it is being used in an overwhelming number of instances when it is not necessary and in plenty of instances in which it is harmful. When a therapeutic agent acts perfectly well by the oral route, why court trouble by throwing it into the circulation? The number of emergencies in which the intravenous route is the only possible method of administration for vitamin B₁ hydrochloride, and countless other therapeutic agents is negligibly small. The throwing of a substance of which our knowledge is incomplete into a circulatory situation of which our knowledge is also incomplete brings about a combination out of which any reasoning person would anticipate trouble beforehand. The intravenous route should be limited to such aid as cannot be administered otherwise or to emergencies in which the possible danger is less than that of delay.

MILES J. BREUER, M.D., Lincoln, Neb.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

ALABAMA: Montgomery, June 28. Sec., Dr. J. N. Baker, 519 Dexter Ave., Montgomery.

ALASKA: Juneau, Sept. 6. Sec., Dr. W. W. Council, Box 561, Juneau.

ARIZONA: Basic Science. Tucson, June 21. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson. Medical. Phoenix, July 5-6. Sec., Dr. J. H. Patterson, 826 Security Bldg., Phoenix.

ARKANSAS: Little Rock, Nov. 3-4. Sec., State Medical Board of the Arkansas Medical Society, Dr. L. J. Kosminsky, Texarkana.

CALIFORNIA: Reciprocity. Los Angeles, July 11, San Francisco, Sept. 14, and Los Angeles, Nov. 16. Written examinations. San Francisco, June 27-30, Los Angeles, July 11-14, and Sacramento, Oct. 17-20. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, July 6-8. Sec., Dr. Harvey W. Snyder, 831 Republic Bldg., Denver.

CONNECTICUT: Medical (Regular). Hartford, July 12-13. Endorsement. Hartford, July 26. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. Medical (Homeopathic). Derby, July 12. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DELAWARE: Dover, July 12-14. Reciprocity. Dover, July 19. Sec., Medical Council of Delaware, Dr. Joseph S. McDaniel, 229 S. State St., Dover.

DISTRICT OF COLUMBIA: Basic Science. Washington, June 27-28. Medical. Washington, July 11-12. Asst. Sec., Commission on Licensure, Mr. Paul Foley, 203 District Bldg., Washington.

FLORIDA: Jacksonville, June 13-14. Sec., Dr. William M. Rowlett, Box 786, Tampa.

HAWAII: Honolulu, July 11-14. Sec., Dr. James A. Morgan, 48 Alexander Young Bldg., Honolulu.

IDAHO: Boise, Oct. 4-5. Commissioner of Law Enforcement, Hon. J. L. Balderston, 205 State House, Boise.

ILLINOIS: Chicago, June 28-July 1, and Oct. 18-20. Superintendent of Registration, Department of Registration and Education, Mr. Homer J. Byrd, Springfield.

INDIANA: Indianapolis, June 21-23. Sec., Board of Medical Registration and Examination, Dr. J. W. Bowers, 301 State House, Indianapolis.

IOWA: Basic Science. Des Moines, July 12. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MAINE: Augusta, July 5-6. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: Medical (Regular). Baltimore, June 21-24. Sec., Dr. John T. O'Mara, 1215 Cathedral St., Baltimore. Medical (Homeopathic). Baltimore, June 21-22. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: Boston, July 12-14. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 413-F State House, Boston.

MICHIGAN: Ann Arbor and Detroit, June 13-15. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: Minneapolis, June 21-23. Sec., Dr. Julian F. Du Bois, 350 St. Peter St., St. Paul.

MISSISSIPPI: Jackson, June 22-23. Asst. Sec., State Board of Health, Dr. R. N. Whitfield, Jackson.

MONTANA: Helena, Oct. 4. Sec., Dr. S. A. Cooney, 216 Power Block, Helena.

NEVADA: Reciprocity. Carson City, Aug. 1. Applications must be completed and on file by July 17. Sec., Dr. John E. Worden, Capitol Bldg., Carson City.

NEW HAMPSHIRE: Concord, Sept. 15-16. Sec., Board of Registration in Medicine, Dr. Fred E. Clow, State House, Concord.

NEW JERSEY: Trenton, June 21-22. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 10-11. Sec., Dr. Le Grand Ward, 135 Palace Ave., Santa Fe.

NEW YORK: Albany, Buffalo, New York, and Syracuse, June 27-30 and Sept. 19-22. Chief, Professional Examinations Bureau, Mr. Herbert J. Hamilton, 315 Education Bldg., Albany.

NORTH CAROLINA: Raleigh, June 13. Sec., Dr. B. J. Lawrence, 503 Professional Bldg., Raleigh.

NORTH DAKOTA: Grand Forks, July 5-8. Sec., Dr. G. M. Williamson, 4½ S. 3rd St., Grand Forks.

OREGON: Medical. Portland, June 21-23. Sec., Dr. Joseph F. Wood, 509 Selling Bldg., Portland. Basic Science. Corvallis, July 16 and Portland, Nov. 19. Sec., State Board of Higher Education, Mr. Charles D. Byrne, University of Oregon, Eugene.

PENNSYLVANIA: Philadelphia and Pittsburgh, July 5-9. Sec., Board of Medical Education and Licensure, Dr. James A. Newpher, 400 Education Bldg., Harrisburg.

RHODE ISLAND: Providence, July 7-8. Chief, Division of Examiners, Mr. Robert D. Wholey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: Columbia, June 28. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

SOUTH DAKOTA: Rapid City, July 19-20. Director of Medical Licensure, Dr. B. A. Dyar, State Board of Health, Pierre.

TENNESSEE: Knoxville, Memphis, and Nashville, June 15-16. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.

TEXAS: San Antonio, June 20-22. Sec., Dr. T. J. Crowe, 918 Mercantile Bldg., Dallas.

VERMONT: Burlington, June 15-17. Sec., Board of Medical Registration, Dr. W. Scott Nay, Underhill.

VIRGINIA: Richmond, June 22-24. Sec., Dr. J. W. Preston, 30½ Franklin Road, Roanoke.

WEST VIRGINIA: Elkins, July 4-6. Sec., Public Health Council, Dr. Arthur E. McClue, State Capitol, Charleston.

WISCONSIN: Milwaukee, June 28-July 1. Sec., Dr. Henry J. Gramling, 2203 S. Layton Blvd., Milwaukee.

NATIONAL BOARD OF MEDICAL EXAMINERS SPECIAL BOARDS

Examinations of the National Board of Medical Examiners and Special Boards were published in THE JOURNAL, June 4, page 1947.

North Dakota January Examination

Dr. G. M. Williamson, secretary, North Dakota State Board of Medical Examiners, reports the oral, written and practical examination held at Grand Forks, Jan. 4-7, 1938. Ten candidates were examined, eight of whom passed and two failed. Four physicians were licensed by reciprocity and two physicians were licensed by endorsement after an oral examination. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Colorado School of Medicine.....	(1932)		76.3
Loyola University School of			77.5
Rush Medical College.....			75.7
University of Minnesota Med	(1928)		80.5
University of Buffalo School of Medicine.....	(1932)		77.4
McGill University Faculty of Medicine.....			
School	FAILED	Year Grad.	Per Cent
College of Medical Evangelists.....	(1937)		71.9
University of Tennessee College of Medicine.....	(1931)		72.3
School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Northwestern University Medical School.....	(1936)		Illinois
University of Illinois College of Medicine.....	(1922)		Illinois
Indiana University School of Medicine.....	(1932)		Indiana
University of Texas School of Medicine.....	(1924)		Texas
School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists.....	(1937)		N. B. M. Ex.
University of Louisville School of Medicine.....	(1934)		N. B. M. Ex.

New York Endorsement Report

Mr. Herbert J. Hamilton, chief, Professional Examinations Bureau, reports 80 physicians licensed by endorsement from January 1 through February 28, 1938. The following schools were represented:

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
University of Arkansas School of Medicine.....	(1929)		Arkansas
Yale University School of Medicine.....	(1934), (1935), (1936)		N. B. M. Ex.
Georgetown University School of Medicine.....	(1935)		N. B. M. Ex.
Howard University College of Medicine.....	(1931)		Virginia
Emory University School of	(1935, 2)		Georgia
Indiana University School of	(1935, 2)		Indiana
University of Louisville Scho	(1935, 2)		Kentucky
Johns Hopkins University School of Medicine.....	(1937)		Maryland
University of Maryland School of Medicine and Col- lege of Physicians and Surgeons.....	(1937, 3)		Maryland
..... Medical School.....	(1935), (1936)		N. B. M. Ex.
..... Medical School.....	(1932), (1936)		N. B. M. Ex.
..... Medical School.....	(1934), (1937)		N. B. M. Ex.
..... Medical School.....	(1934), (1937)		N. B. M. Ex.
..... School of Medicine.....	(1931)		Missouri
(1936) New Jersey			
Creighton University School of Medicine.....	(1936)		Indiana
Nebraska School of Medicine.....	(1936)		Mass.
University of Nebraska College of Medicine.....	(1914)		Nebraska
Albany Medical College.....	(1936)		N. B. M. Ex.
Columbia University College of Physicians and Sur- geons.....	(1934), (1936)		N. B. M. Ex.
Cornell University Medical College.....	(1934), (1935)		N. B. M. Ex.
Long Island College of			N. B. M. Ex.
New York Medical Coller			N. B. M. Ex.
New York University Co			N. B. M. Ex.
Duke University School of			N. B. M. Ex.
Western Reserve University			N. B. M. Ex.
University of Pennsylvania			Penna.
Meharry			Tennessee
Vanderbilt			Tennessee
Baylor Un			Tennessee
University of Vermont College of Medicine.....	(1929)		Vermont
(1936) N. B. M. Ex.			
Medical College of Virginia.....	(1936)		Virginia
University of Virginia Department of Medicine.....	(1937)		Virginia
Dalhousie University Faculty of Medicine.....	(1935)		New Jersey
Queen's University Faculty of Medicine.....	(1933)		Wisconsin
University of Toronto Faculty of Medicine.....	(1916)		Wisconsin
McGill University Faculty of Medicine.....	(1934), (1935), (1936)		N. B. M. Ex.
Universidad de la Habana Facultad de Medicina y Farmacia.....	(1926)		Maryland
Christian-Albrechts-Universität Medizinische Fakultät, Kiel.....	(1926)		Germany
Friedrich-Alexanders-Universität Medizinische Fakultät, Erlangen.....	(1916)		Germany
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin.....	(1936)		Texas
Hessische Ludwigs-Universität Medizinische Fakultät, Giessen.....	(1922)		Germany
Ludwig-Maximilians-Universität Medizinische Fakultät, München.....	(1901)		Germany
Rheinische Friedrich-Wilhelms-Universität Medizin- ische Fakultät, Bonn.....	(1919)		Germany
Regia Università degli Studi di Bologna, Facoltà di Medicina e Chirurgia.....	(1935)		Maryland

Regia Università degli Studi di Roma, Facoltà di
Medicina e Chirurgia.....(1934, 2), (1935, 2) New Jersey,
(1935), (1936, 2) Maryland
Regia Università di Napoli Facoltà di Medicina e
Chirurgia.....(1934) Maryland,
(1924), (1935) New Jersey
Universität Bern Medizinische Fakultät.....(1934) N. B. M. Ex.
Université de Genève Faculté de Médecine.....(1936) N. B. M. Ex.

Book Notices

Diseases of Women for the General Practitioner. By Paul Titus, Obstetrician and Gynecologist to the St. Margaret Memorial Hospital, Pittsburgh. National Medical Monographs. Edited by Morris Fishbein, M.D. Cloth. Price, \$3. Pp. 320, with 55 illustrations. New York: National Medical Book Co., Inc., 1937.

This new member of the national medical monograph series is all that its name implies. It is simply, clearly and tersely written, presenting the whole subject of gynecology from the point of view of the general practitioner. Special emphasis is laid on accurate and early diagnosis, especially in the sections on carcinoma of the cervix and uterus and in the chapter on ectopic pregnancy. Operative procedures and microscopic pathology are properly omitted. The office treatment of ambulatory patients is emphasized, since, as the author states, "the greatest bulk of gynecologic practice is nonoperative." The introductory chapter describing the necessary supplies and instruments is excellent. The chapter on anatomy and physiology is simply and clearly written, but it is to be regretted that the author has seen fit to describe "rhythmic birth control" as factual and accurate. It is hoped that in the succeeding editions the author will place more emphasis on the relationship of the general physical condition to gynecologic problems, and that routine complete physical examinations will be stressed; that hypothyroidism will be mentioned in connection with the discussion on menorrhagia, since this is one of the most common etiologic factors; that the recommended use of Goodell dilators be omitted; and, finally, that the section on anesthesia carry a statement on some type of anesthesia other than the combination of rectal anesthesia, nitrous oxide and ether. In these days when ethylene, cyclopropane and other inhalation anesthetics give such safe and satisfactory results, it seems unnecessary to many to use a combined routine as recommended by the author. The chapter on sterility and its management is an excellent summary of the present day position and management of the sterile couple and can serve as a perfect guide for the general practitioner. The illustrations are adequate. All in all, this volume is an excellent textbook on nonoperative gynecology and is to be highly recommended to every general practitioner.

Elements of Chromotherapy: The Administration of Ultra-Violet, Infra-Red and Luminous Rays Through Colour-Filters. By R. Douglas Howat, L.R.C.P., L.R.C.S., L.R.F.P.S. With foreword by Sir Henry Gauvain, M.D., M.Chir., F.R.C.S. Cloth. Price, 8s. 6d. Pp. 106, with 21 illustrations. London: Actinic Press, Ltd., 1938.

This small book deals with the use of visible and invisible light rays through colored filters. There are chapters devoted to history, physics, erythema, action on bacteria, filters, lamps, technic and clinical observations. The author advocates the use of visible light through colored filters and makes many extravagant claims for the value of such radiations. Because of the fact that practically all modern experts in light therapy have considered that the use of colored lights can have no other effect on the human body than a psychic one, and because a noted authority on the physics of light, W. W. Coblentz of the Bureau of Standards of the United States government and member of the Council on Physical Therapy of the American Medical Association, has said "If the rays in the visible spectrum have any special therapeutic action, it remains to be determined," this textbook was reviewed with considerable care to determine whether the author had any new material to offer which might alter the generally accepted views on the subject and might justify his statement that chromotherapy was of value.

On superficial examination of the author's chapter on the action of color rays on bacteria, the impression is obtained that a rather imposing array of direct quotations has been presented

to support the author's views. However, when one carefully checks the brief bibliography which has been appended to the book, it is found that a number of the sources of references have not been given and that those that are given are not in any sense new and advanced ideas but on the contrary are extremely antiquated. For example, in the chapter cited which deals with the action of color rays on bacteria, the references that were given were dated 1877, 1904, 1858, 1883, 1879, 1889 and 1903. Such outdated material, all of it over 25 years of age, of course merits no serious consideration in a modern textbook and is of interest only from a historical standpoint. A check of the bibliography for the entire book shows that twenty-one of the forty-five references are articles written more than twenty-five years ago. The author bases his contentions on such obsolete material and on twenty-five sketchy case reports, all of which are presented in a highly unscientific manner. Typical of these case reports is the first one, which describes the treatment of "acidity" by application of a "red filter over epigastrium for fifteen minutes." The author reported that after a dozen treatments the patient "was absolutely free from symptoms and declared that she had never felt so fit."

The reviewer feels that it is such unscientific outmoded presentations which hamper the rapid growth of an extremely important field of medicine. The reading of such books creates in the mind of the average physician an unjustified critical attitude toward the entire field of physical therapy. The wide distribution of this book will probably hamper rather than aid the cause of physical therapy. The reviewer is rather amazed that a medical man could write such an unscientific textbook and that one so famed as Sir Henry Gauvain should be willing to lend his name to its publication. This textbook is not recommended.

Religion and Medicine of the Gã People. By M. J. Field. Cloth. Price, \$6.50. Pp. 214, with 31 illustrations. New York, London & Toronto: Oxford University Press, 1937.

The Gã people occupy parts of the Gold Coast region of western Africa, and the present volume is the result of a number of years of studies of the tribe by the author. The work gained the author a doctorate at the London University. Of its three parts the second deals with the principles and practice of medicine (and magic). These are almost wholly conditioned by the basic concepts by the Gã of the human being. This they hold is compounded of three entities—the *susuma*, or personality, spirit or soul; the *kla*, corresponding to life, and the material *body*. On the complex actions and interactions of these principles, and on the influences on them of spirits and witches, are based the conceptions and treatment of all disorders the cause and course of which are not plainly obvious. A chapter of the book deals with interesting hysterical manifestations among the people and with mediums, another with the medicine men and the means they use for curative purposes. In finding the causes of disease, diagnosis, prognosis and treatment there is an occasional spark of common sense, but the essentials are involved thaumaturgic ideas and practices, all of which to a medical man among ourselves is interesting mainly as a suggestion of what may have been the views and practices among our own faraway ancestry.

Traumatismes de l'oreille. Fractures du rocher—coups de feu de l'oreille, commotions labyrinthiques, expertises en otologie. Par J. A. Ramadier, oto-rhino-laryngologiste de l'Hôpital de la Pitié, et R. Causse, assistant d'oto-rhino-laryngologie des hôpitaux de Paris. Paper. Price, 45 francs. Pp. 150, with 15 illustrations. Paris: Masson & Cie, 1937.

This excellent monograph presents the subject of trauma to the auditory apparatus in detailed, clear and concise fashion. Most of the text is based on the authors' own experience, yet the conclusions are drawn only after due consideration of the opinions of other observers. The subject matter is aptly divided into five sections: (1) trauma to the external ear, the drum and the tympanic cavity; (2) fractures of the auricular skeleton; (3) injury by firearms; (4) commotio labyrinthi, and (5) medicolegal aspects. Thus every phase of the topic is covered. The authors attempt to group the symptoms and diagnostic signs in such a fashion as to make the indications for treatment clear. Yet it is conceded that while this may look well on paper, in actual practice one may find that certain cases overlap and do not readily fall within the given classification. However, the method is a good one since it brings to the fore the cardinal principles

on which safe conduct of the case depends. The discussion of commotio labyrinthi is an interesting one and the authors take great pains to offer every possible bit of advice that may be useful in distinguishing the simple subjective type which gets well spontaneously from the type in which there are definite objective manifestations. In the chapter on the medicolegal aspects of trauma the authors discuss thoroughly the questions of degree of disability, prognosis and malingering and describe in detail the numerous tests. Even true and false tinnitus are given attention. The book is adequately illustrated by reproductions of histologic sections and roentgenograms, the value of which is greatly enhanced by the accompanying explanatory diagrams. In the chapters on surgical treatment one finds Ramadier quite at home, since his approach to the petrous apex by way of the carotid canal is now a well accepted procedure and is in this connection modified to meet the conditions. It is safe to say that this little volume will be well appreciated by otologists as well as general surgeons who are interested in traumatic surgery.

Alkali Disease or Selenium Poisoning. By Alvin L. Moxon. South Dakota State College of Agriculture and Mechanic Arts, Agricultural Experiment Station, Department of Experiment Station Chemistry. Bulletin 311. Paper. Pp. 91, with 26 illustrations. Brookings, S. D., 1937.

Although, as the author points out, the term "alkali disease" is essentially a misnomer, it remains in use and probably will be retained to designate the specific type of selenium poisoning to which it was originally applied. This monograph contains an excellent brief historical review of the development of knowledge of this disease and includes an interesting quotation suggesting that Marco Polo might have referred to alkali disease. The subsequent portion is devoted principally to the study of the disease in live stock and poultry, including a considerable number of interesting original experiments. There is little reference to the selenium problem so far as it might affect human beings but the author concludes that in certain sections the selenium problem has proved a serious handicap to agricultural development. This study serves as a useful addition to the rapidly increasing literature on selenium poisoning.

Therapie der Tuberkulose. Herausgegeben von Prof. Dr. J. Berberich und Dozent Dr. P. Splro. Bearbeitet von J. Van Assen et al. Bände I und II. Paper. Price, 25 florins per set. Pp. 324, with 11 illustrations; 327-845, with 3 illustrations. Leiden: A. W. Sijthoff's Uitgeversmaatschappij N. V., 1937.

The contributions of investigators of tuberculosis during the past decade has reflected itself in new views on therapy, especially the view that tuberculosis is not a disease of an individual organ or organ system but of the organism as a whole, which has led to the necessity for treating the tuberculous human being. The desire of the practitioner to possess such an encompassing summary, which even the specialist of best intentions cannot keep abreast of today because of the extensiveness of the field, inspired these volumes. The first volume concerns itself with the general problems, the second with special fields of tuberculosis therapy. Collaborators from many different countries have made the volumes diversified and added materially to their value. A critical sketch of therapy in modern times is presented as the introduction by the master of therapy in tuberculosis, Prof. Albert Fraenkel of Heidelberg. Modern phthisiology and phthisiotherapy are characterized by the transition from empiric intuition to pathologic-clinical knowledge. The chapters in volume I include the biology and determination of the tubercle bacilli; immunity, including the natural and specific immune factors and the influence of nonspecific stimulants on specific immune processes (antigens and antibodies are discussed); the pathogenesis, the morphology and the allergic relations of the healing processes in tuberculosis; a chapter on the anatomic and experimental observations with therapeutic tests (animal); control of the course of tuberculosis; therapy by roentgenograms; tuberculin diagnosis; tuberculin therapy; protective immunization with tuberculin and BCG; tuberculosis as a chronic disease and the social hygienic treatment, and chemotherapy and vocational therapy. Volume 2 is introduced by a consideration of tuberculosis of the upper air passages followed by chapters on the therapy of pulmonary tuberculosis, surgery of pulmonary tuberculosis and the therapy of miliary tuberculosis. The organic systems are further considered as

cardiac and circulatory, gastrointestinal, lymph glandular, bone and joint, and so on, while lymphogranulomatosis, tuberculosis and diabetes mellitus are appropriately considered. The therapy of tuberculosis of childhood and of the aged is not neglected, and finally pregnancy, and psychology and psychotherapy are discussed. A valuable feature is the extensive bibliography at the end of each chapter, where it is readily accessible to use if desired. The list of notable collaborators attests the high quality of the contents, which include, besides the authors, Ernst Brieger, Albert Fraenkel, Julius Hollo of Budapest, Walter Pagel, Arvid Wallgren of Gotenburg and others. The volumes are paper covered, well printed, substantially bound, and suitably illustrated. There is an author and subject index at the end of volume 2. For those who are able to read German fairly fluently, these volumes should make a valuable addition to a practical library, although—and this is no criticism—heavily flavored with European views. The specialist in internal medicine and tuberculosis and the student of medicine will find much valuable information in these volumes which, though stressing therapy, do not do so at the expense of information on tuberculosis in general but weave therapy into the picture based on fundamental knowledge of tuberculosis of the newer types. It is refreshing to admit that there is a comprehensive textbook which could be critized by the exacting investigator but which contains so much valuable material that it might be then signified as possible individual prejudice. The volumes merit an extensive circulation.

Digestive Tract Pain; Diagnosis and Treatment: Experimental Observations. By Chester M. Jones, M.D., Assistant Professor of Medicine, Harvard University. Cloth. Price, \$2.50. Pp. 152, with 5 illustrations. New York: Macmillan Company, 1938.

This book is brief but well written and has a few important illustrations. The disturbances of the digestive tract and their diagnosis and treatment are approached principally by an analysis of pain, the chief symptom. The author has concisely presented his experimental observations on pain, produced at various levels of the digestive tract in normal and abnormal states. The clinical application of these experimental observations is then discussed. This discussion is amplified by a series of case reports, which are not only interesting but strikingly illustrative of the principal theme of the author: the importance of pain in the digestive tract. The author has not failed to recognize the importance of gastrointestinal pain in "functional disease." This chapter likewise is well illustrated by case histories. The final chapter is an excellent summary and contains many important therapeutic considerations which show a well ordered conception of the manifold problems of the digestive disorders. The author has indeed presented a concise monograph which should stimulate the gastro-enterologist to continue similar experimental and clinical observations and should likewise be revealing to the general practitioner of the newer concepts of gastrointestinal diseases.

Febrile Episoden bei schizophrenen Psychosen: Eine klinische und pathophysiologische Studie. Von Dr. med. habil. K. F. Scheid, Oberarzt der psychiatrischen Abteilung des städtischen Krankenhauses, München-Schwabing. Boards. Price, 7.80 marks. Pp. 97, with 7 illustrations. Leipzig: Georg Thieme, 1937.

The author presents a study of a small series of psychoses classified as schizophrenic, with conspicuous somatic disturbances, especially fever, cyanosis and tachycardia. Detailed analysis of the changes in the blood picture, blood chemistry and cerebrospinal fluid were made in an attempt to discover the etiologic pathophysiologic process. The cases were selected to exclude all those in which any known exogenous toxic or infectious factors might be present. In the first group of febrile cyanotic psychoses, all acute or subacute, lasting from a few days to a few months, all terminating in coma and death, no adequate explanation of the disease was found at necropsy except dilatation of the heart and venous stasis. In all these cases, as in the cases of febrile and subfebrile episodes during the course of protracted schizophrenic psychoses, the author finds certain changes in the cellular and chemical constituents of the blood indicating a hemolytic process. He concludes from a study of his material that there is a causal relationship between the destruction of blood corpuscles (hemolysis) and these schizophrenic psychoses.

Treatment by Diet. By Clifford J. Barborka, B.S., M.S., M.D., Department of Medicine, Northwestern University Medical School, Chicago. Third edition. Cloth. Price, \$5. Pp. 642, with 8 illustrations. Philadelphia, London & Montreal: J. B. Lippincott Company, 1937.

In this edition some errors have been corrected from the first two editions and articles have been added on the present status of the clinical aspects of the vitamins and the present conception of the use of protamine zinc insulin. This volume fails to take account, however, of the newer discoveries in the field of the vitamins which indicate the chemical nature of these substances. The vast majority of the book consists of tables of food substances, providing diets for all sorts of medical conditions. In the appendix there are additional tabular data related to weights, measures and recipes, and there is also an extensive bibliography. The book serves well as a reference work for the practitioner who simply will not take the time to acquaint himself with the basic information regarding nutrition and diet but who wants to use the results of such considerations.

Speech Training for Cases of Cleft Palate. By M. C. Oldfield, M.Ch., F.R.C.S. Cloth. Price, 4s. 6d. Pp. 18, with 38 illustrations. London: H. K. Lewis & Co., Ltd., 1938.

The title of this book gives promise of more than is actually forthcoming. The material is distinctly disappointing, not because of any intrinsic lack of worth but because of its brevity and sketchy presentation. Of the eighteen pages in the book, two are devoted to an introduction, four to photographs (the most interesting aspect of the book), and the remaining twelve pages to a tabulation of the various speech sounds, with illustrative diagrams and a few simple exercises—all of which may be found in almost any general book on speech. While the author is undoubtedly sincere in her attempt to give the reader the benefit of her own practical experience, which is commendable, a book usually is written to give as complete a presentation of the subject as possible. Actually, the present work is merely a pamphlet elevated to book dignity by having stiff covers. The same material has been presented before and in much greater detail. The book really recommends itself only because of its eight photographs. The speech therapist or interested layman who wishes to gain a more comprehensive knowledge of the subject will undoubtedly have to supplement the volume with other reading.

A Textbook of Hematology. By William Magner, M.D., D.P.H., Pathologist, Saint Michael's Hospital, Toronto, Canada. Cloth. Price, \$4.50. Pp. 395, with 26 illustrations. Philadelphia: P. Blakiston's Son & Co., Inc., 1938.

The author has attempted to describe fully but concisely the clinical features of disorders of the hemopoietic system and the associated changes in the blood and tissues. This objective has necessitated much simplification without attendant inaccuracy, and on the whole the author has met this problem successfully. The controversial features of terminology have been discussed briefly and fairly. The book is not profusely illustrated and for laboratory use it probably would have to be supplemented by a hematologic atlas. Beginning students of the blood and non-specializing clinicians may find this a useful addition to their libraries.

Experimentelle Bakteriologie und Infektionskrankheiten mit besonderer Berücksichtigung der Immunitätslehre. Von W. Kolle und H. Hetsch. Unter Mitarbeit von Prof. Dr. H. Schlossberger. Herausgegeben von Prof. Dr. H. Hetsch. Eighth edition. Paper. Price, 30 marks. Pp. 836, with 92 illustrations. Berlin & Vienna: Urban & Schwarzenberg, 1938.

This is a monumental work. Originally presented by Professors Kolle and Hetsch with the assistance of Professor Schlossberger, it now appears under the editorship of Professor Hetsch, Professor Kolle having died some time ago. The present edition covers nearly every phase of bacteriology, virus diseases and the more important tropical diseases. Each disease is discussed under a separate chapter and the important bacteriologic technical details are given, also the important symptomatology, and a short pathologic discussion of the disease. There are excellent colored plates of smear and culture preparations and numerous black and white reproductions. At the end of each chapter there is a bibliography. Important references to the American literature has been omitted. In the section on virus diseases there is no mention of the work done by Dr. Rivers of the Rockefeller Institute in this country. The important work on streptococci by Dr. Lancefield is not

presented. This book can be highly recommended to the bacteriologist, immunologist and public health worker as well as the student in bacteriology who is interested in a more detailed presentation of the subject.

My Scrapbook of Medicine. By Louis R. Ettler, A.M., M.D., F.A.C.S. With Bibliography and Index. Cloth. Price, \$3. Pp. 248. Toledo, Ohio: McManus-Troup Company, 1937.

This privately published work includes a series of items in prose and in verse collected by the author from various places. Most of the references concern the history of medicine. Some of them are taken from newspaper clippings. The book is printed in mixed deep black and light black type, which makes it difficult to read. In any event, however, it is the kind of book that one picks up for occasional scraps of interesting material rather than as sustained reading matter.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Medical Practice Acts: Conviction Under Harrison Narcotic Act a Felony and Involves Moral Turpitude.—The medical practice act of Texas authorizes any court of competent jurisdiction to revoke a license to practice medicine if the licensee has been found guilty of a felony or of a crime involving moral turpitude. The appellant, a physician, was convicted in the United States district court for the southern district of Texas of violating the Harrison Narcotic Act, he having confessed to the sale of narcotics to an addict. Thereafter the state, on relation of the state board of medical examiners, instituted appropriate proceedings to revoke the appellant's license. The license was revoked and the physician appealed to the court of civil appeals of Texas, Galveston.

The appellant contended that the offense for which he had been convicted was then a felony under the laws of the United States but not under the laws of Texas, and that before his license to practice could be revoked it had to be shown that he had been convicted of an offense which was then a felony under the state laws. But, the court said, the medical practice act does not require, in order to justify the revocation of a license to practice medicine, that the holder be convicted of an offense of the grade of a felony in Texas, but only of an offense that was of the grade of a felony anywhere. Since the conviction of a violation of the Harrison Narcotic Act constitutes a felony, it was plain to the court that the revocation of the appellant's license was justified because of that conviction.

That moral turpitude inhered in the acts from which the conviction resulted was, in the opinion of the court, a legitimate, if not inevitable, inference. The appellant apparently argued that, since the Harrison Narcotic Act was a revenue measure only, a violation of it does not involve moral turpitude. But, said the court, while the Harrison Narcotic Act does have that character so far as may be necessary to uphold the power of Congress under the constitution in enacting it, its further and underlying purpose is to regulate and control the sale of narcotics in consonance with a widespread feeling that it is not good morals to sell such dangerous drugs except in pursuance of the professional ministrations of a physician in treating patients. The record showed not only that the appellant was convicted in the federal court for selling morphine unlawfully but that he was also convicted of smuggling narcotics into the United States. Even though the sale by itself should not be considered a crime involving moral turpitude, the court thought that smuggling is so regarded.

The trial court committed no error in refusing to submit to the jury the question of whether or not the appellant's right to practice medicine in Texas should be canceled. That, obviously, was a question of law for the court.

The appellate court having found no error in the record, the judgment of revocation was affirmed.—*Speer v. State (Texas)*, 109 S. W. (2d) 1150.

Contracts: Agreements in Restraint of Medical Practice Valid If Reasonable.—Two young physicians, the appellants in this case, as a part of a contract of employment entered into with several physicians composing a partnership, agreed that if they, the appellants, terminated the contract they would not within five years from the date of such termination engage in practice in the community or within five miles of its corporate limits. A disagreement arose, the two physicians withdrew from the employment and each entered independently on the practice of medicine in the community. The physicians composing the partnership, the appellees, then instituted proceedings to enjoin the appellants from engaging in practice in contravention of their agreement. The trial court issued the injunction and the enjoined physicians appealed to the Supreme Court of Mississippi, contending that their promise not to practice their profession in the community or within five miles thereof for five years was unenforceable.

It is well settled, said the court, that "a bargain by an assistant, servant, or agent not to compete with his employer, or principal, during the term of the employment or agency, or thereafter, within such territory and during such time as may be reasonably necessary for the protection of the employer or principal, without imposing undue hardship on the employee or agent," is valid "unless effecting, or forming part of a plan to effect, a monopoly." 2 Rest. Contracts, Sec. 516. In the present case, the court pointed out, the limitation of time and space was undoubtedly reasonable, and the evidence disclosed that the public interest would not suffer by an enforcement of the agreement, for the number of physicians in the community was amply sufficient to render necessary medical services to the citizens. No monopoly was either contemplated by the contract or would result from its enforcement.

To enable the physicians forming the partnership to enforce the agreement of the appellants by means of an injunction, it must appear, the court said, that the former performed their obligations under the contract. They would not be entitled to an injunction if they failed to perform their part of the bargain and thereby caused the withdrawal of the appellants from their service. But such did not occur here. The physicians forming the partnership acceded to every demand made on them by the appellants and at no time indicated that they would not perform their obligations under the contract. This being true, there was no default on the part of the partnership physicians which justified the appellants in the course they took.

Finding no error in the judgment of the trial court, the Supreme Court affirmed that judgment enjoining the appellants from engaging in the practice of medicine contrary to the agreement they made.—*Wilson v. Gamble (Miss.)*, 177 So. 363.

Society Proceedings

COMING MEETINGS

- American Medical Association, San Francisco, June 13-17. Dr. Olin West, 535 North Dearborn St., Chicago, Secretary.
- American Academy of Tuberculosis Physicians, San Francisco, June 17-18. Dr. Arnold Minnig, 638 Metropolitan Bldg., Denver, Secretary.
- American Association of Medical Milk Commissions, San Francisco, June 13-14. Dr. Paul B. Cassidy, 2037 Pine St., Philadelphia, Secretary.
- American Medical Women's Association, San Francisco, June 12-14. Dr. Helen A. Cary, 1634 N.E. Halsey St., Portland, Ore., Secretary.
- American Proctologic Society, San Francisco, June 11-13. Dr. Curtice Rosser, 710 Medical Arts Bldg., Dallas, Texas, Secretary.
- American Radium Society, San Francisco, June 13-14. Dr. F. W. O'Brien, 465 Beacon St., Boston, Secretary.
- American Rheumatism Association, San Francisco, June 13. Dr. Loring T. Swaim, 372 Marlborough St., Boston, Secretary.
- American Urological Association, Quebec, Canada, June 27-30. Dr. Clyde L. Deming, 789 Howard Ave., New Haven, Conn., Secretary.
- Association for the Study of Internal Secretions, San Francisco, June 13-14. Dr. E. Kost Shelton, 921 Westwood Blvd., Los Angeles, Secretary.
- Maine Medical Association, Bar Harbor, June 26-28. Dr. F. R. Carter, 22 Arsenal St., Portland, Secretary.
- Medical Library Association, Boston, June 28-30. Miss Janet Doo, 2 East 103d St., New York, Secretary.
- Minnesota State Medical Association, Duluth, June 29-July 1. Dr. E. A. Meyerding, 11 West Summit Ave., St. Paul, Secretary.
- National Tuberculosis Association, Los Angeles, June 20-23. Dr. Charles J. Hatfield, 7th and Lombard Sts., Philadelphia, Secretary.
- West Virginia State Medical Association, White Sulphur Springs, July 11-13. Mr. Joe W. Savage, Public Library Building, Charleston, Executive Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1927 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them. Titles marked with an asterisk (*) are abstracted below.

American Heart Journal, St. Louis

15: 385-514 (April) 1938

- *Causes of Death in Patients with Congestive Heart Failure. R. H. Williams and J. Rainey, Nashville, Tenn.—p. 385.
- *Some Problems in Diagnosis, Prognosis and Treatment of Acute Arterial Occlusion. H. E. Rykert and D. Graham, Toronto, Canada.—p. 395.
- Electrogram of Cardiac Muscle: II. Lengths of Stages of Activity. A. G. Macleod, New York.—p. 402.
- Ventricular Deflections in Myocardial Infarction: Electrocardiographic Study Using Esophageal and Precordial Leads. J. G. M. Hamilton and J. Nyboer, Boston.—p. 414.
- Comparative Effects of Water Baths and Mustard Baths at Varying Temperatures on Rate of Peripheral Blood Flow in Man. J. A. Killian and C. A. Oelassen, New York.—p. 425.
- *Electrocardiographic Changes Found in Twenty-Two Cases of Carbon Monoxide (Illuminating Gas) Poisoning. W. H. Stearns, C. K. Drinker and T. J. Shaughnessy, Boston.—p. 434.
- Blood Pressure and Size of Cardiac Infarct. Janet Travell, H. Gold and W. Modell, New York.—p. 448.
- Coronary Vasoconstrictor Action of Foreign Species Blood. L. N. Katz, W. Weinstein and K. Jochim, Chicago.—p. 452.
- Occlusion of Coronary Arteries by Hemorrhage into Their Walls. W. B. Wartman, Cleveland.—p. 459.
- Study of Electrical Activity in Auricles. D. I. Abramson, N. M. Fenichel and C. Shookhoff, Brooklyn.—p. 471.
- Congenital Transposition of the Great Arterial Trunks. D. W. Ingham and F. A. Willis, Rochester, Minn.—p. 482.

Causes of Death in Congestive Heart Failure.—Williams and Rainey analyzed the records of 185 patients who gave a convincing history of congestive heart failure and who died and were subjected to postmortem examination at the Vanderbilt University Hospital during 1926 to 1935. In recent years the life of patients who suffer from congestive heart failure has been definitely increased. This increase seems best accounted for by the more effective control of congestive failure, through the intensive use of mercurial and xanthine diuretics. Death from congestive heart failure and from pulmonary embolism and infarction distinctly decreased in frequency during the period 1931 to 1935. During this period pneumonia, both as a primary and as a supplementary cause of death, increased in frequency, particularly in patients with arteriosclerotic disease. Intensive treatment with salyrgan did not increase the incidence of uremia in the nonhypertensive patients. Uremia occurred with increased frequency in the 1931-1935 hypertensive group as compared with the 1926-1930 group. Whether the increased incidence of uremia in the subjects with hypertensive cardiac disease was due entirely to the prolonged life which resulted from improvement in the treatment of cardiac disease, thus allowing progression of renal damage to occur, or whether in some instances the mercurial diuretics actually favored progression of renal disease cannot be stated with certainty.

Acute Arterial Occlusion.—In a series of thirty-six cases of acute embolic occlusion, Rykert and Graham observed that pain was present as the initial complaint in 64 per cent of cases, was of maximal severity at the onset in 53 per cent and was present in the later stages of the condition in 100 per cent of cases. Pain of maximal severity at the onset usually was located at the level of the occlusion and less often in the distal part of the affected limb, and pain present in the later stages of the condition was always located distal to the site of the occlusion. Arteriotomy provides the only means whereby the obstruction may be removed and the continuity of the occluded artery restored. This is possible only in acute arterial occlusions due to emboli. The satisfactory immediate results following early operation in a considerable percentage of cases of acute embolic occlusion made embolectomy the accepted method of treatment in this condition. Too much stress has

been laid on the satisfactory results that may follow early operation and too little attention has been paid to the late results following embolectomy and to the percentage of spontaneous recovery of the circulation following acute arterial occlusion. In the thirty-six cases of complete occlusion, of the common femoral artery in twenty and of the popliteal artery in sixteen, spontaneous recovery of the circulation occurred in approximately 20 per cent of each group. When acute embolic occlusion of the arteries of the upper extremities occurs in patients not suffering from severe failure of the general circulation, spontaneous recovery would appear to be the rule rather than the exception. The primary disease and not the immediate restoration of the peripheral circulation is the important factor in determining the late prognosis in acute arterial occlusion. As the primary disease is of so much importance in both the causation and the prognosis of acute arterial occlusion from thrombosis and embolism, treatment directed toward the early restoration of the circulation by measures other than embolectomy would seem to be indicated. Alternate suction and pressure therapy has the advantage of being applicable to cases of thrombosis as well as of embolism, and in the treatment of the latter is not limited by the duration of the occlusion.

Electrocardiographic Changes in Carbon Monoxide Poisoning.—In their series of twenty-two cases of carbon monoxide asphyxia, Stearns and his associates found that the most common electrocardiographic deviation is an abnormality in the T waves or in the level of the ST segment; there were eighteen such cases. Four patients showed paroxysmal auricular fibrillation and one showed transitory intraventricular block. Two showed ventricular premature contractions and one auricular premature contractions. Low voltage on the initial electrocardiogram, later improving or returning to normal, was present in five. Variations in the P waves occurred in two. All the patients were admitted directly to the emergency ward on their arrival at the hospital. However, before being removed from the scene of their asphyxiation they had been treated with inhalations of 7 per cent carbon dioxide and 93 per cent oxygen for varying lengths of time. The authors feel that the changes, having been transitory, may be ascribed directly to the carbon monoxide asphyxia, except when coronary disease may have been a contributing cause in some cases. They limit their study to the period of recovery from the marked anoxemia after emergency oxygen and carbon dioxide treatment. The results, while indicating that intraventricular block may result from carbon monoxide poisoning, suggest that this is not the usual outcome.

American Journal of Diseases of Children, Chicago

55: 667-896 (April) 1938

- Acute Laryngotracheobronchitis. J. Brennemann, W. M. Clifton, A. Frank and P. Holinger, Chicago.—p. 667.
- Tonic Neck Reflexes in Children Considered from Prognostic Standpoint. R. K. Byers, Boston.—p. 696.
- Hysterical Blindness in Children: Report of Two Cases. E. Wolff and G. S. Lachman, San Francisco.—p. 743.
- *Nutritional Heart Disease in Children. J. I. Waring, Charleston, S. C.—p. 750.
- Congenital Heart Disease: Clinical and Postmortem Study of 105 Cases. S. Gibson and W. M. Clifton, Chicago.—p. 761.
- *Prophylaxis Against Measles with Globulin Fraction of Immune Human Adult Serum. S. Karellitz, New York.—p. 768.
- Hemoglobin Differences in Healthy White and Negro Infants. Betty Munday, M. L. Shepherd, Louise Emerson, B. M. Hamil, M. W. Poole and Icie G. Macy, Detroit, and T. E. Raiford, Ann Arbor, Mich.—p. 776.
- Primary Carcinoma of Liver in Childhood: Report of Two Cases, with Critical Review of Literature. M. M. Steiner, Brooklyn.—p. 807.

Nutritional Heart Disease in Children.—Waring presents thirteen cases of cardiac disturbances of nutritional origin. The diagnosis of nutritional cardiac disease was made on the basis of the following observations: cardiac enlargement, shown by percussion and by roentgen examination, without accompanying murmur; negative results of urinalyses; absence or sluggishness of reflexes; a history of deficient diet, and a more or less rapid response to rest and sufficient food. Dietetic histories in most cases were vague, but malnutrition was generally evident. Twelve of the thirteen patients were Negro children aged from 14 to 48 months. The cause of cardiac enlargement does not appear in these cases. Whether deficiency of vitamin B₁, deficiency of protein or general dietetic deficiency

is the fundamental cause is still a matter of some disagreement. All the patients improved on adequate diets strengthened with materials rich in vitamin B₁. It appears that the cardiac changes are not entirely due to a lack of vitamin B₁ but to a rather more general deficiency of dietary materials and that a satisfactory response to dietetic treatment may be expected in cases in which the illness is not too far advanced.

Prophylaxis Against Measles.—Karelitz recommends further trial of the globulin fraction of immune adult serum in the prophylaxis of measles for the following reasons: 1. It has been efficacious in doses easily calculated from the known indicated doses of immune adult serum. 2. It is easily prepared from immune adult blood. 3. The amount of the injection is small compared with the amount of immune adult serum injected, and the serum may be prepared so that the dosage is equal to or less than that of measles convalescent serum; thus the procedure of inoculation is simple. 4. The danger of infecting a child with syphilis, tuberculosis or other diseases is eliminated. 5. The reactions are less severe and the results are more uniform than those after injecting equally small doses of commercial solutions of placental globulin. 6. The solutions of adult serum can be transported and can be stored in the ice box without loss of potency for at least one year.

American Journal of Pathology, Boston

14: 125-252 (March) 1938

- Nesidioblastoma, the Islet Tumor of the Pancreas. G. F. Laidlaw, New York.—p. 125.
Developmental Defects at the Foramen Ovale. B. M. Patten, Ann Arbor, Mich.—p. 135.
Effect of Syphilis on Local Tuberculous Lesions in Rabbits. J. D. Aronson and D. R. Meranze, Philadelphia.—p. 163.
Spontaneous Cardiovascular Disease in the Rat: I. Lesions of the Heart. S. L. Wilens and E. E. Sproul, New York.—p. 177.
Id.: II. Lesions of Vascular System. S. L. Wilens and E. E. Sproul, New York.—p. 201.
Transmission of Chloroleukemia of Mice. J. W. Hall and F. J. Knoke, New York.—p. 217.
Distribution of Material Following Intracerebral Inoculation into Macacus Rhesus Monkeys and Its Possible Influence on Results of Neutralization Tests in Experimental Poliomyelitis. M. Schaeffer and R. S. Muckenfuss, New York.—p. 227.
Modification of Masson Trichrome Technic for Routine Laboratory Purposes. J. Goldner, New York.—p. 237.
Useful Methods for Routine Examination of Brain Tumors. N. C. Foot, New York.—p. 245.

American Journal of Physiology, Baltimore

122: 1-274 (April) 1938. Partial Index

- Transmission of Trains of Impulses Through a Sympathetic Ganglion and in Its Postganglionic Nerves. D. W. Bronk, S. S. Tower, D. Y. Solandt and M. G. Larrabee, Philadelphia.—p. 1.
Effect of Administration of Adrenal Cortical Hormone Preparations on Fertility, Pregnancy and Lactation in the Normal Rat. V. E. Hall, San Francisco; P. E. Chamberlin and O. H. Müller.—p. 16.
*Question of Cardiac Hypertrophy During Pregnancy. E. J. Van Liere and C. K. Sleeth, Morgantown, W. Va.—p. 34.
Pancreas and Deposition of Fat in the Liver. C. H. Best and Jessie H. Ridout, Toronto.—p. 67.
Absence of Changes in Gastric Activity and of Gastrointestinal Ulceration Following Hypothalamic Lesions in Monkey and Cat. J. Martin and J. G. Schnedorf, Chicago.—p. 81.
Influence of Adrenalectomy on Ketolytic Activity. E. M. MacKay, San Diego, Calif., and R. H. Barnes, La Jolla, Calif.—p. 101.
Effects of Amniotin or Theelin on Metabolism of Liver and Kidney. Dorothy H. Andersen and J. Victor, New York.—p. 113.
Choline as a Stimulant of Gastric Secretion. F. C. MacIntosh and Luise Krueger, Montreal.—p. 119.
Effects of Adrenalectomy on Water Exchange of Cats with Diabetes Insipidus. W. R. Ingram and C. A. Winter, Iowa City.—p. 143.
Efficiency of Mammary Gland in Production of Milk. W. R. Graham Jr., O. B. Houchin, V. E. Peterson and C. W. Turner, Columbia, Mo.—p. 150.
Lactoflavin (Riboflavin) Increases Hemoglobin Production in Anemic Dog. P. György, Cleveland; Frieda S. Robscheit-Robbins and G. H. Whipple, Rochester, N. Y.—p. 154.
Roles of Anterior Pituitary and Thyroid in Stimulation of Tissue Metabolism Following Theelin Administration. J. Victor and Dorothy H. Andersen, New York.—p. 167.
Early Blood Changes During and Hyperventilation Following Residence at Moderate Altitudes. F. L. Apperly, Richmond, Va.—p. 179.
Changes in Blood Flow Through the Brain and Muscles During Arrest of Breathing. L. Irving, Toronto.—p. 207.
Heart Failure Analyzed in Isolated Heart Circuit. L. N. Katz and M. Mendlowitz, Chicago.—p. 262.

Cardiac Hypertrophy During Pregnancy.—On the basis of their investigations on guinea pigs, cats and dogs, Van Liere and Sleeth maintain that pregnancy does not cause cardiac

hypertrophy in these animals. Since pregnancy does not produce cardiac hypertrophy in three different types of animals it seems doubtful that it would produce it in human beings. Increased cardiac work does not necessarily produce cardiac hypertrophy.

Am. J. Syphilis, Gonorrhea and Ven. Dis., St. Louis

22: 269-400 (May) 1938

- Qualifications of Venereal Disease Control Officer. T. B. Turner, Baltimore.—p. 269.
*Thermal Death Time of Gonococcus at Fever Temperatures. C. M. Carpenter, Ruth A. Boak and S. L. Warren, Rochester, N. Y.—p. 279.
Bismuth Studies: VI. Bismuth Absorption from Site of Injection in Dogs. T. Sollmann and Katharine Henderson, Cleveland.—p. 286.
Morphologic Variations of Syphilitic Germ. A. Bessemans, Ghent, Belgium.—p. 294.
Functional Variations of Treponema Pallidum. A. Bessemans, Ghent, Belgium.—p. 301.
*Complement Fixation Test for Gonorrhea with Increased Antibody Content. E. Weiss and L. Arnold, Chicago.—p. 310.
Case of Congenital Neurosyphilis, Aged Sixty Years, with Multiple Osteoarthropathies. W. C. Menninger and C. C. Carlson, Topeka, Kan.—p. 327.
Trypsinamide Dermatitis. F. A. Ellis, Baltimore.—p. 336.
Detection of Syphilis in a Urologic Clinic. L. Friedman and M. L. Mazer, Philadelphia.—p. 340.
Fever Due to Iodides. L. Katzenstein, Baltimore.—p. 346.
Sulfanilamide May Revolutionize Laboratory Identification of Gonococci: Microslide Characteristics Have Changed. W. R. Jones, Seattle.—p. 349.
Mapharsen in Wassermann-Fast Syphilis. L. Chargin and W. Leifer, New York.—p. 355.
Is Mercury a Specific for Syphilis? Preliminary Report. D. M. Sidlick and A. Strauss, Philadelphia.—p. 358.
Accidental Intra-Arterial Injection of Bismuth in Oil with Demonstration of Bismuth by X-Ray in Arterioles of the Penis. L. W. Kimberly, Iowa City.—p. 364.
Effects of Placental Extract on Course of Experimental Rabbit Syphilis. J. E. Kemp and C. Shaw, with technical assistance of Elsie Mae Fitzgerald, Chicago.—p. 368.
Depigmentation of Iris in Experimental Rabbit Syphilis. W. E. Coutts and J. M. Herrera, Santiago, Chile, South America.—p. 381.

Thermal Death Time of Gonococcus.—Carpenter and his colleagues determined the thermal death time at 41.5 C. (106.7 F.) on 250 strains of *Neisseria gonorrhoeae*. The results show a variation of from six to thirty-four hours in the heat resistance of the cultures studied. Only 0.4 per cent of the strains had thermal death times longer than twenty-four hours. The mean was 16.1 hours, with a standard deviation of 4.8 hours. Approximately 75 per cent of the strains died within one standard deviation to either side of the mean. The data show no correlation between the thermal death time of the strain of gonococcus and either the localization of the infection or the virulence of the invading strain, as expressed by severity of symptoms. A definite thermal death time is a characteristic of each strain of gonococcus, as the thermal death time was unchanged even after the organism was established in a new host; i. e., a consort. A patient may harbor simultaneously more than one strain of the gonococcus. Thus, cultures isolated on the same occasion from two different diseased sites have showed thermal death times which have varied in length from two to nine hours. A similar variance has been noted in the thermal death times of cultures taken from the same source at different times during a period when the patient was receiving no treatment. In some instances a fever treatment one or two hours less in duration than the thermal death time of the isolated organism has resulted in cure. In other cases, however, when the treatment has been four hours shorter than the thermal death time, cure has not been brought about.

Complement Fixation Test for Gonorrhea.—Weiss and Arnold recommend the use of larger amounts of the patient's serum in the complement fixation test for gonorrhea. Larger amounts of the patient's serum (from 1 to 2 cc.) fix larger amounts of complement. By using the same amounts of complement and increasing the amounts of the patient's serum, the stability of the fixation increases. This observation applies in a similar way to the hemolysin (amboceptor). The more serum that is used in the test, the more stable is the reaction with regard to the use of larger amounts of amboceptor. Large amounts of serum contain more antibodies, and, if used in complement fixation tests, they actually fix the complement to a higher degree than smaller amounts of serum. The result is a higher percentage of positive reactions in instances in

which otherwise negative results would be obtained. The statement that complement fixation tests for gonorrhea are not as stable as observed in syphilis appears to be erroneous on the basis of the authors' results. It is generally accepted that fewer antibodies are present in gonorrheal than in syphilitic serums. In these studies, different amounts of a patient's serum were used and it was found that not only the percentage but also the stability of the positive reactions increases with the use of larger quantities of serum. With the use of from 1 to 2 cc. of serum, positive reactions remain strongly positive even after an incubation period of twenty-four hours. The probable cause of this difference in the amount of antibodies is that gonorrhea is a more or less localized infection while syphilis represents a generalized infection. With the use of larger amounts of serums the percentage of anticomplementary reactions must increase and they are more easily detected. If the serums are properly taken, preserved and prepared for the test the number of anticomplementary serums will not be noticeably increased, even when used in larger quantities. Large amounts of natural amboceptor present in increased quantities of the patient's serum do not interfere with the results of the fixation test when a sufficient number of units of artificial hemolysin is used in the hemolytic system. That the test is not applicable in the first three weeks of the infection does not decrease its value. Whenever smears show definitely that gonococci are present, this test is not indicated or necessary. The proper application of this test is found in conditions in which the clinical diagnosis is uncertain and smears do not show gonococci; in treated cases in which the positiveness of the reaction gradually decreases, the ultimate negative reaction probably indicates cure if the reaction remains negative, and in instances in which there is a definite history of a gonorrheal infection and when it is important to determine whether some foci are still present in the body. A positive complement fixation test for gonorrhea indicates the presence of gonococcal foci in the body.

Archives of Physical Therapy, Chicago

19: 193-256 (April) 1938

- Studies on Biologic Effect of Colored Light. H. Vollmer, New York.—p. 197.
Present Status of Massage. H. J. Behrend, New York.—p. 212.
Electrosurgical Management of Retinal Separation. O. B. Nugent, Chicago.—p. 219.
Correction of Retinal Separation by Diathermy and Catholysis. L. C. Peter, Philadelphia.—p. 223.
Therapeutic Value of Postural Correction. J. T. Nicholson and L. B. Laplace, Philadelphia.—p. 229.
Multiple Needle Outfit for Histamine Test of Peripheral Circulation. D. H. Kling, Los Angeles.—p. 234.
Transurethral Resection. J. A. Hyams, New York.—p. 235.

Endocrinology, Los Angeles

22: 521-630 (May) 1938

- Role of Hypophysis in Cranial Osteomyelitis, Petrositis and Sinus Infections. G. Levene, L. F. Johnson, R. M. Lowman and E. G. Wissing, Boston.—p. 521.
*Relation of Iodine Tolerance to Thyroid Function. E. M. Watson, with technical assistance of A. S. Barber, London, Ont., Canada.—p. 528.
Influence of Thyroid Gland and of Ovary on Metabolism of Iodine: Experimental Study in Dog. H. J. Perkin and B. R. Brown, Boston.—p. 538.
Dynamic Tests in Thyrotoxicosis. W. Bartlett Jr., St. Louis.—p. 543.
Metabolic, Cardiovascular and Biochemical Changes Associated with Experimentally Induced Hyperthyroidism in Schizophrenia. L. H. Cohen and J. H. Fierman, Worcester, Mass.—p. 548.
Experimental Induction of Estrus in the Dog. J. H. Leatham, Princeton, N. J.—p. 559.
Inhibition of Gonadotropic Activity by Sex Hormones in Parabolic Rats. E. Cutuly and Elizabeth C. Cutuly, Cleveland.—p. 568.
Electrical Excitability (Chronaxie) of Rat's Uterus, Throughout Estrus Cycle. F. C. Katzenstein, Chicago.—p. 579.
Potency of Certain Commercial Hormone Preparations. F. E. D'Amour and Marie C. D'Amour, Denver.—p. 583.
Gonadotropic Potency of Hypophysis in a Wild Male Rodent with Annual Rut. L. J. Wells, Columbia, Mo.—p. 588.

Iodine Tolerance and Thyroid Function.—Watson affirms that the iodine tolerance test (originally abstracted in *THE JOURNAL* July 4, 1936, p. 76) provides evidence of diagnostic importance in cases of doubtful thyroid disease and that a more comprehensive understanding of endocrine disorders may be acquired by studies of the iodine metabolism. Anatomic and functional abnormalities of the thyroid may be considered from the standpoint of probable alterations of the iodine metabolism.

The nature of such disturbances can be studied by observing the rate and completeness of disappearance from the blood stream of iodine after its intravenous injection. The results of ninety-one iodine tolerance tests in eighty cases are recorded. The thyroid apparently is the only organ which abstracts and stores iodine from the blood. This property is accelerated in conditions of thyroid hyperplasia associated with thyrotoxicosis, as exemplified by the abnormal rapidity with which the iodine leaves the blood. Injected iodine disappears less rapidly from the circulation in hypothyroidism. There is no definite correlation between the iodine tolerance and the basal metabolism. The anterior pituitary through its influence on the thyroid may affect the basal metabolism and the iodine tolerance test in an inverse manner.

Florida Medical Association Journal, Jacksonville

24: 519-570 (April) 1938

- Use of X-Radiation in Conditions Other Than Malignancy. G. Raap, Miami.—p. 531.
Acute Hematogenous Osteomyelitis. F. A. Vogt, Miami.—p. 534.
Diagnostic Value of Neutralizing Function of the Stomach. K. Phillips and A. B. Litterer, Miami.—p. 537.
Fractures of the Spine. M. P. Travers, Miami.—p. 541.

Journal of Bacteriology, Baltimore

35: 343-454 (April) 1938. Partial Index

- Use of Chorio-Allantoic Membrane of Developing Chick Embryo as Medium in Study of Virus Myxomatosis. Rachel E. Hoffstadt and K. S. Pilcher, Seattle.—p. 353.
Strict Anaerobes in Slime and Intestines of Haddock (*Gadus Aeglefinus*). J. M. Shewan, Aberdeen, Scotland.—p. 397.
Effects of Surface Tension and Osmotic Pressure on Gross Morphology of Certain Pathogenic Fungi. J. W. Williams, Cambridge, Mass.—p. 409.
"Tyrosinase Reaction" of Actinomycetes. C. E. Skinner, Minneapolis.—p. 415.
Serologic Identification of *Streptococcus Zymogenes* with Lancefield Group D. F. R. Smith, C. F. Niven and J. M. Sherman, Ithaca, N. Y.—p. 425.
Experiments on Nutrition of *Streptococci*. S. H. Hutner, Ithaca, N. Y.—p. 429.
Electrophoretic Migration Velocity of *Escherichia Coli* After Cultivation on Mediums of Various Composition: II. Observations Following Changes in Inorganic Constituents. R. P. Tittsler and G. P. Berry, Rochester, N. Y.—p. 441.

Journal of Urology, Baltimore

39: 391-588 (April) 1938

- Report of Seven Cases of Cystitis Emphysematosa. H. G. Wells, Chicago.—p. 391.
Urethral Ectopic Ureter in the Female Without Incontinence: Case Report. I. Freeman, Baltimore.—p. 398.
*Is Sudden Emptying of Chronically Distended Bladder Dangerous? C. D. Creevy, Minneapolis.—p. 403.
Prostatography: Preliminary Report. S. Soifer, Brooklyn.—p. 410.
Primary Carcinoma of Urethra: Report of Case. P. D. Melvin, Miami, Fla.—p. 414.
Further Report on Use of Livermore Method for Relief of Hydrocele. G. R. Livermore, Memphis, Tenn.—p. 418.
Anatomic Study by Injection Technic of Ejaculatory Ducts and Their Relations. S. McMahon, San Francisco.—p. 422.
Fundamentals in Water Balance. W. G. Maddock, Ann Arbor, Mich.—p. 444.
Electric Meatotome. L. W. Riba, Chicago.—p. 464.
Two-Stage Nephrectomy. C. P. Mathé, San Francisco.—p. 469.
Ectopic Kidney: Report of Thirteen Cases Exclusive of Horseshoe Kidneys. D. W. MacKenzie and A. B. Hawthorne, Montreal.—p. 479.
Squamous Cell Carcinoma of Renal Pelvis, with Special Consideration as to Etiology. A. A. Kutzmann, Los Angeles.—p. 487.
Diverticula and Cyst of the Female Urethra. C. M. Johnson, San Francisco.—p. 506.
New Incision for Radical Operation for Epithelioma of the Penis. F. P. Johnson, Portland, Ore.—p. 517.
Value of Correlating Hormone Tests with Histologic Sections in Tumor of the Testis. T. O. Powell, Los Angeles.—p. 522.
*Urogenital Tuberculosis: Complications Following Diagnostic and Surgical Procedures. R. B. Henline and J. L. Bray, New York.—p. 529.
Urology in Children. H. O. Mertz and H. G. Hamer, Indianapolis.—p. 548.
Clinical Evaluation of Cystometer. J. G. Cheetham, Portland, Ore.—p. 569.

Sudden Emptying of Distended Bladder.—Creevy reviewed the postmortem records of seventy-one patients with enlarged prostates who died without being operated on, in order to determine whether sudden emptying of a distended bladder was dangerous. Detailed study of this material led to the following conclusions: 1. The rate at which the distended bladder is emptied does not influence the outcome. 2. It is

impossible to distinguish by examination of the urinary tract at necropsy between bladders emptied suddenly and bladders decompressed slowly. 3. Death was due in 80 per cent of the patients who died after catheterization to renal failure secondary to acute and chronic pyelonephritis superimposed on a varying degree of hydronephrosis. 4. In 20 per cent death was due to extrarenal disease, such as pneumonia, endocarditis, pyemia and peritonitis. In this group are found the counterparts of those sudden deaths recorded in the literature as due to reflex syncope or to shock; these patients, however, died of pulmonary embolism and coronary thrombosis. 5. All the phenomena usually attributed to sudden emptying of the distended bladder may be produced by acute pyelonephritis. The author checked these conclusions against clinical as well as necropsy material. He reviewed two series of patients, all with 500 cc. or more of residual urine due to obstruction at the vesical neck. These two series each consisted of approximately 120 patients. The first group, seen in 1918 and 1919, had been treated with the inlying catheter without regard to the rate of the emptying of the bladder, while the second had been subjected to gradual decompression. Of the first group, 4.1 per cent died without other treatment. The survivors were treated by suprapubic prostatectomy with a mortality of 5.2 per cent. In the second group the mortality was 4.16 per cent and from prostatectomy 5.3 per cent. This supports the conclusion that gradual decompression of the chronically distended bladder offers no advantage over simple catheterization.

Urogenital Tuberculosis.—Henline and Bray stress that urogenital tuberculosis is a localized lesion which is only part of the general disease from which the patient is suffering. Tuberculosis is almost invariably present elsewhere in the body, and recognition of the extent and stage of the disease is essential before local treatment is instituted. The frequency with which tuberculous meningitis and miliary and pulmonary tuberculosis develop as terminal stages in patients with urogenital tuberculosis has not been stressed in the literature. These manifestations may occur during or immediately after diagnostic or surgical procedures, or months or even years later. When they occur in the course of diagnostic or surgical urogenital treatment, it is natural to assume a relationship between the manipulation and the fatal tuberculous lesion. There is no more reason for anticipating a dissemination of the infection after surgery for tuberculosis than after surgical procedures in other pyogenic infections. Seven histories are presented of patients who have died from the progression of a generalized tuberculous process after diagnostic or surgical urogenital procedures.

New England Journal of Medicine, Boston

218: 627-662 (April 14) 1938

- Heterotopic Gastric Mucosa. A. R. Kimpton and A. R. Crane, Boston.—p. 627.
The Hinton Test: V. Adult Congenital Syphilis Otherwise Undetected. A. W. Cheever, Boston.—p. 630.
Id.: VI. Syphilis Acquired in Childhood. A. W. Cheever, Boston.—p. 632.
Primary Adamantinoma of the Tibia. R. E. Dunne, Hartford, Conn.—p. 634.
Practical Physical Medicine for Chronic Arthritis. R. T. Phillips, Boston.—p. 639.

Northwest Medicine, Seattle

37: 95-126 (April) 1938

- Imperforate Anus: Report of Case. H. E. Coe, Seattle.—p. 95.
Diverticulitis. E. A. Nixon, Seattle.—p. 97.
Spontaneous Ileocolostomy. O. F. Lamson, Seattle.—p. 100.
Perforation of Aorta and Jejunum by Metastatic Carcinoma Resulting in Exsanguination. R. E. Mosiman, Seattle.—p. 101.
Bumper Fractures of Tibia. H. T. Buckner, Seattle.—p. 102.
Osteochondritis Dissecans: Report of Cases. H. J. Wyckoff, Seattle.—p. 105.
Multiple Fractures in the Aged. P. W. Willis, Seattle.—p. 106.
Shelving Operations of the Hip. J. F. LeCocq, Seattle.—p. 107.
Radical Inferior Cheiloplasty for Advanced Carcinoma of Lower Lip: Report of Two Cases. J. E. Wirth, Seattle.—p. 109.
Pregnancy Tests: A Few Timely Remarks. P. R. Rollins, Seattle.—p. 112.
Placenta Praevia and Its Frequency in Private Practice. C. M. Helwig, Seattle.—p. 114.
Carcinoma of Right Lung: Probably Primary. J. N. Davis, Kimberly, Idaho.—p. 115.

Ohio State Medical Journal, Columbus

34: 369-496 (April) 1938

- Modern Pulmonary Tuberculosis Therapy. P. M. Holmes, Toledo.—p. 385.
Gastroscopy as Diagnostic Aid. E. A. Marshall, Cleveland.—p. 388.
Congenital Absence of Vermiform Appendix: Case Reports. C. M. Rambo and L. Lasky, Zanesville.—p. 394.
Intracranial Arteriovenous Aneurysm. G. D. Kirk, Columbus.—p. 395.
Osteochondroma of the Bronchus: Case. P. W. Gebauer, Cleveland.—p. 398.
Streptococcal Septicemia. H. A. Bollinger and L. R. Emler, Toledo.—p. 399.
Transurethral Prostatectomy. W. A. Keitzer, Akron.—p. 400.
Prevention of Infection and Relapse in Fungous Disease of the Feet. L. Goldman, Cincinnati.—p. 405.
Shock Therapy of Schizophrenia. Beatrice Postle, Columbus.—p. 410.
Melanosarcoma of Choroid: Case Reports. H. V. Phelan, Cleveland.—p. 414.

Pennsylvania Medical Journal, Harrisburg

41: 565-662 (April) 1938

- Use of Relaxation Incisions When Dealing with Scars. J. S. Davis, Baltimore.—p. 565.
Early Diagnosis of Perinephric Infections. W. A. Barrett, Pittsburgh.—p. 573.
Chronic Infection of Pharynx. H. P. Schenck, Philadelphia.—p. 578.
Significance of Dermatophytosis in Diabetes. H. T. Kelly, Philadelphia.—p. 581.
Syphilitic Diabetes: Additional Case Reports. J. R. Kitchell, Philadelphia.—p. 587.
End Results in Uncontrolled Mild Diabetes. E. S. Dillon and W. W. Dyer, Philadelphia.—p. 589.
Syphilis and Optic Atrophy: Plea for Early Diagnosis. P. L. Davis, Philadelphia.—p. 591.
Evaluation of Procedures Used in Diagnosis of Pulmonary Disease. C. H. Marey, Pittsburgh.—p. 594.
Surgical Treatment of Brain Abscess. F. C. Grant and R. A. Groff, Philadelphia.—p. 597.
Ciliary Spasm. C. Carpenter, Philadelphia.—p. 601.
Functional Results of Gallbladder Surgery in 500 Cases. P. Correll, Easton.—p. 604.
The Executive Assistant to the Trustee: A Liaison Officer. R. L. Anderson, Pittsburgh.—p. 607.
How to Educate Rural Communities in Adequate Maternal Care. J. S. Taylor, Altoona.—p. 610.
The Problem of the Early Diagnosis of Cancer. W. L. Estes Jr., Bethlehem.—p. 613.

Philippine Islands Med. Association Journal, Manila

18: 125-188 (March) 1938

- Intergovernmental Conference of Far Eastern Countries on Rural Hygiene, with Particular Reference to Leprosy. C. Manalang, Manila.—p. 125.
Non-Acid-Fast Forms of Mycobacterium Lepae in Leprotic Lesions: Preliminary Report. J. Manalang, Cullion.—p. 135.
*Can Malaria Be Contracted in Utero? E. Y. Garcia, Manila.—p. 141.
Keratomalacia in Children. A. V. Tupas and L. Peache, Manila.—p. 147.
Presence of Rickettsia in Brains of Rats Captured in Manila. K. Oda, Manila.—p. 151.

Malaria in Utero.—Garcia cites two cases of malignant tertian malaria infection occurring during pregnancy and terminating fatally before the onset of labor. In the first case, ring forms, old trophozoites and schizonts of *Plasmodium falciparum* were found in the maternal blood immediately before death and infected cells were found in large numbers in histologic sections of the placenta and a few in the umbilical cord. In the second case a large number of infected cells (young and old schizonts of *Plasmodium falciparum*) were found in the heart and bone marrow of the fetus and a few in the cord. These cases present more definite proof of the existence of transplacental infection in the fetus, he says, than has previously been recorded in the literature.

Physiological Reviews, Baltimore

18: 137-328 (April) 1938

- Sympathetic Vasodilator Fibers. J. H. Burn, London, England.—p. 137.
Sites of Formation of Estrogenic Substances in Animal Body. G. W. Corner, Rochester, N. Y.—p. 154.
Autolysis and Atrophy. H. C. Bradley, Madison, Wis.—p. 173.
Causes and Mechanism of Thrombosis. M. Sillberg, St. Louis.—p. 197.
Arteriovenous Anastomoses. E. R. Clark, Philadelphia.—p. 229.
Undernutrition and Carbohydrate Metabolism. W. H. Chambers, New York.—p. 248.
Present Status of the Ergot Question. E. E. Nelson, New Orleans, and H. O. Calvery.—p. 297.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Medical Journal, London

1: 661-712 (March 26) 1938

- Physical Basis of "Bilioussness" and "Wind Round the Heart." A. Hurst.—p. 661.
*Output of Prolan A in Urine in Certain Extragenital Conditions: Report of an Investigation. Dorothy Woodman.—p. 666.
Labyrinthine Giddiness: Its Nature and Treatment. A. J. Wright.—p. 668.
Internal Strangulation Through an Aperture in the Mesentery. J. A. Baty.—p. 671.
Incidence of Unequal Pupils in Unconvicted Prisoners. H. K. Snell and G. A. Cormack.—p. 672.

Follicle Stimulating Factor in Extragenital Conditions.

—Woodman examined sixty-six cases in which there were lesions of the secondary sex organs for their urinary excretion of the follicle stimulating factor. The method used to determine the amount of the factor in the urine was that described by Ferguson (1933). Of the twenty-eight cases of varying breast lesions investigated, two gave positive results—acute abscess (it was later found that the patient was pregnant) and tuberculous mastitis. The positive reaction in the case of tuberculous mastitis cannot be explained unless the patient was pregnant at the time and the pregnancy had a short duration and was terminated without the patient being aware of the fact. All the thirty-two cases of benign enlargement of the prostate, both before and after operation, gave negative results, indicating that the hypertrophy of the prostate which develops in later life cannot be correlated with that form of pituitary activity which is associated with an increased excretion of gonadotropic substance and also that the Aschheim-Zondek test has no diagnostic value in this condition. The only case of pituitary adenoma (associated with acromegaly) gave a negative result. Two cases of teratoma testis were both positive. Another positive reaction was in a woman of 25 who complained of a blood-stained discharge following a miscarriage. Two months after the miscarriage a positive Aschheim-Zondek reaction was obtained. As the discharge continued, curettement was done. Only blood clot and fragments of normal-looking endometrium were found. Three weeks later the Aschheim-Zondek test was negative. Eleven months after the curettement, the patient returned to the hospital with a large mass in the uterus which was diagnosed as a chorionic epithelioma, and a positive Aschheim-Zondek reaction was obtained. She was treated with radium, and a week later the test was repeated and was still strongly positive. She died a day after the last test. A large mass was found in the uterus and vagina, with metastatic nodules in the lungs. In the beginning a normal pregnancy was present. The pregnancy was later terminated in an abortion, which explains the curettage observations and the negative test, but some residual chorionic tissue must have been present, since a chorionic epithelioma developed later; but at that stage it was not sufficient to give a positive Aschheim-Zondek reaction.

Glasgow Medical Journal

11: 161-220 (April) 1938

- Paget's Disease of Bone: Its Frequency, Diagnosis and Complications. J. F. Brailsford.—p. 161.

Lancet, London

1: 707-762 (March 26) 1938

- Chronic Mastitis. H. J. B. Atkins.—p. 707.
*Intrathecal Sulfanilamide in Meningococcal Meningitis. A. Eldahl.—p. 712.
Pseudohemophilia in a Woman. H. Joules and R. G. Macfarlane.—p. 715.
*Serologic Studies in Epidemic Influenza, with Particular Reference to Persistence of Antibodies After Infection. R. W. Fairbrother and A. E. Martin.—p. 718.
*Vitamin K in Human Pathology. H. Dam and J. Glavind.—p. 720.

Intrathecal Sulfanilamide in Meningococcal Meningitis.

—Eldahl treated twelve patients who had severe meningococcal meningitis with sulfanilamide intrathecally. Their ages varied from 3 months to 4 years. Three patients died. Two patients among those who recovered had meningococcal septicemia. Both children were at the time of their admission so run down that the outlook was hopeless. Nevertheless they got well quickly.

The conclusion reached about the sulfanilamide treatment of meningococcal meningitis is that it has but little effect if the remedy is administered exclusively by mouth or intramuscularly. But if it is given intrathecally along with the other administrations, the treatment is of real value. This is probably because the elimination of the sulfanilamide through the meninges may be both slow and slight when they are inflamed. It is not likely that intrathecal injections alone are sufficient, because meningococci can be found outside the spinal canal, and on these the sulfanilamide, when given by mouth or intramuscularly, can have considerable effect. The amount of the 0.8 per cent sulfanilamide solution injected varies from 5 to 30 cc., according to the amount of spinal fluid withdrawn but is always less than the amount withdrawn. The intramuscular doses have been from 35 to 150 cc., according to the weight of the patients. The average fatality rate of meningococcal meningitis in the author's hospital for the last six years has been 70 per cent for children less than 4 years of age.

Serologic Studies in Epidemic Influenza.—The reason for the relatively short duration of immunity to influenza has not been determined. In view of the high antibody content, usually found in those who have recently recovered from infection, this low-grade immunity is surprising. The probable factors are the existence of several immunologically distinct strains of virus and the rapid disappearance of the antibodies produced by infection. As a number of recently infected persons were available, Fairbrother and Martin studied the fluctuations in the antibody content of their serum over periods of from ten to twelve months; i. e., the part played by the second of the foregoing factors. The antibody titer appears to be a simple index of resistance to infection—absence of antibodies or a relatively low titer indicates susceptibility and a high titer resistance. The critical level that demarcates these two states cannot however be defined with any accuracy. The high level in the antibody content of the serum is not maintained and after from ten to twelve months the titers tend to fall to a level similar to that given before infection.

Vitamin K in Human Pathology.—According to Dam and Glavind, thrombopenia, aplastic anemia, hemophilia, nontropical sprue, myeloma, acute hepatitis, obstructive jaundice, cholelithiasis and cancer may be expected to influence the clotting time. A reduced platelet count has no influence on the clotting time. That injection of a vitamin K concentrate may restore the clotting power of the blood of K avitaminous chicks is known. Therefore the authors gave intramuscular injections of K vitamin concentrates to three patients (one of cancer and two of obstructive jaundice due to cancer) with increased clotting values. The parenteral introduction of 15 mg. of vitamin K daily rendered the clotting power normal in from six to eight days and therefore it is concluded that the increased clotting time before the introduction was due to reduced absorption of vitamin K from the intestine. Experiments on rats having bile fistulas were carried out by Greaves and Schmidt in 1937, who found that an excess of vitamin K in the food counteracted the hemorrhagic diathesis. Warner, Brinkhous and Smith report that the action of alfalfa extract mixed with bile and given by mouth was superior to the usual bile therapy.

Medical Journal of Australia, Sydney

1: 509-550 (March 19) 1938

- Physiologic and Biochemical Considerations of Hepatic Function in Health and Disease. I. Maxwell.—p. 511.
Tuberculous Arthritis of the Hip Joint. T. P. McMurray.—p. 515.
Treatment of the Tuberculous Hip in Children. L. O. Betts.—p. 518.
Treatment of the Tuberculous Hip. J. G. Whitaker.—p. 521.
Matti's Spongiosa Bone Transplant for Ununited Fractures. T. King.—p. 526.
Surgery in the Aged and Debilitated. J. Kennedy.—p. 531.

1: 551-596 (March 26) 1938

- Control of Maternal Mortality and Morbidity. R. M. Allan.—p. 551.
Social Aspects of Rheumatism: Note. F. J. Poynton.—p. 555.
Interpretation of MacLean's Urea Concentration Test in Assessing Renal Function in Pregnancy. Vera I. Krieger.—p. 557.
Some Further Results of Short Wave Therapy. K. R. Speeding.—p. 565.
Dislocation of Intervertebral Disks. R. A. Money.—p. 571.
Observations on Heights and Weights and Growth of Preschool Children in the City of Melbourne. Hilda E. Kincaid and Margaret Stuckey.—p. 575.

Presse Médicale, Paris

46: 649-696 (April 27) 1938. Partial Index

- *Electro-Encephalogram in Certain Pathologic Conditions. G. Marinesco, O. Sager and A. Kreindler.—p. 650.
Total Extirpation of Pancreatic Cysts. I. Iacobovici.—p. 655.
Drainage of Hypophysis Toward Hypothalamus. G. T. Popa.—p. 663.
Pulmonary Cancer in Miners of Joachimstal. H. Sikl.—p. 673.
So-Called Hemolytic Icterus. M. Netousek.—p. 675.
*Lead Content of Blood After Mobilization: Value of This Method in Diagnosis of Saturnism. J. Teisinger.—p. 676.
Several New Experimental Observations on Role of Spleen. A. Kostitch.—p. 683.
Posterior Radicotomy in Treatment of Spasmodic Paralysis. M. Yovtchitch.—p. 689.

Electro-Encephalogram.—Marinesco and his associates point out that it was Berger who first attempted to visualize the variations in the electric potential derived from the cranium. As electrodes he employed needles, which he attached to the scalp after local anesthesia and he made the registration by means of an oscillograph. On the graphic record obtained in this manner he differentiates waves of a frequency of from 8 to 10 Hertz and of a maximum potential of 0.2 millivolt, designated by him as alpha waves; and waves of a greater frequency but a smaller amplitude, which are superimposed on the first and are designated as beta waves. The alpha waves are dependent neither on the respiration nor on the pulsation and consequently they must be an electrical rhythm of the cerebral cortex. Berger's observations were confirmed, completed and extended by a number of other investigators. Marinesco and his associates studied this problem for the last two years. They made their electro-encephalograms either with the method of Berger, by attaching the needles to the anesthetized scalp, or by applying the impolarizable electrodes to the shaved scalp. In the construction of the impolarizable electrodes the authors followed the method used by Lapicque for the electrical excitation of the nerves. Like other investigators, the authors encountered difficulties in interpreting the results. As the most constant characteristic of an electro-encephalogram they regard the frequency of the alpha waves; in the same subject these waves maintain the same level during the entire duration of the recording. The authors regard as anomalies considerable diminutions and augmentations of the frequency, which occur transiently in the course of the recording. On the other hand, the amplitude of the waves varies considerably in the course of a recording. In certain pathologic conditions, several modifications may become manifest. In this paper the authors report their observations on the electro-encephalograms of patients with such disorders as tetany, epilepsy, aphasia, cerebral tumor and coma. They found that in some pathologic cases the anomalies of the electro-encephalogram consisted especially in modifications of the amplitude (epilepsy, tetany) or of the amplitude and of the frequency (aphasia, cerebral tumors and so on). The pathologic cases, with modifications of the frequency but without changes in the amplitude, are extremely rare. Generally a diminution in the frequency is accompanied by a diminution of the amplitude, as for instance in aphasia and in certain cerebral tumors and even with an augmentation of amplitude, as in a case of coma. Nevertheless there are exceptions. In some of the reported cases of aphasia the frequency alone was diminished. But this reduction in frequency was accompanied, if not by a modification of the amplitude, by the intercalation of long pauses. In two cases of cerebral tumor the authors encountered an augmentation of the frequency (15 Hertz in the one, to 18 Hertz in the other) without modification of the amplitude. Likewise, in dementia paralytica the authors occasionally encountered a diminution of the frequency without modification of the amplitude. But this occurrence is rare; in the ninety pathologic cases examined, the authors observed it only eight times.

Mobilization of Lead in Saturnism.—Teisinger shows that the determination of the lead content of the blood is the best diagnostic method in chronic lead poisoning. It is better than the determination of the lead in the urine and in the stool. The most convenient method is the micropolarographic one, because it requires only a small quantity of material and it is at the same time rapid and exact. In advanced cases of

lead intoxication, with all or some of the objective symptoms, the lead content of the blood is always increased. If the intoxication is recent, the high lead content of the blood confirms the diagnosis of intoxication even if the objective symptoms are missing. In extremely chronic cases the lead content of the blood may be normal, even in case of positive intoxication. In these cases diagnostic mobilization may be considered a primary sign. The best means to effect this mobilization are potassium iodide or sodium bicarbonate. The author employed mobilization by means of potassium iodide in eleven cases. The patients were given 10 Gm. of potassium iodide in the course of a week. In five of the cases the result was positive and in the six others the result was negative. Since none of these patients had presented the objective signs of saturnism, it would have been difficult to diagnose the lead poisoning otherwise. Sodium bicarbonate, which increases the elimination of lead in the urine and feces, was used by the author in eight cases. The patients were given 50 Gm. of sodium bicarbonate in the course of a week. In four of them the result was positive; in the other four it was negative. In three of the positive cases, objective symptoms of saturnism existed. Discussing the mobilization by means of parathyroid extract, the author says that this method was first employed by Hunter and Aub. In view of the fact that the metabolism of lead is closely allied with that of calcium, it is assumed that parathyroid extract will influence it. The author decided to try mobilization by parathyroid extract in one case in which saturnism seemed possible and in two cases in which it was certain. In none of the cases did the administration of parathyroid extract result in an elimination of lead or an elevation of the lead content of the blood. However, animal experiments on the mobilization of lead by parathyroid extract proved successful. The author thinks that great differences exist in the potency of parathyroid extract and emphasizes that only those preparations should be used the potency of which is controlled.

Archiv für Verdauungs-Krankheiten, Basel

62: 305-364 (March) 1938

- Protein and Mucin in Normal and Pathologic Gastric Juice. F. Baltzer.—p. 305.
*Functional Test of Stomach with Aid of Uranin Elimination. W. Rotter.—p. 337.

Uranin Elimination as Functional Test of Stomach.—

Rotter cites several functional tests of the stomach but directs attention especially to the dyestuff method of Goldstein and Erber, because it was to be expected that this method would be an aid in the differential diagnosis of ulcer and gastritis. Goldstein and Erber studied the resorption of the dyestuff uranin through the gastric mucosa and discovered that the resorption is more rapid in patients with ventricular and duodenal ulcer than in patients with normal stomachs or with gastritis. Rotter decided to investigate the reliability of the method as a differentiating factor between gastritis and ulcer. On the whole he followed the technic used by Goldstein and Erber. The patients, who had emptied the bladder at 5 a. m., drank at 8 or 9 a. m. 1 Gm. of uranin dissolved in 250 cc. of slightly sweetened tea. Beginning with the fifth minute after this the urine was evacuated at one minute intervals and the first appearance of a noticeable fluorescence was watched for. In order to avoid errors due to the color of the urine and to the difference in quantity of urine contained in the bladder, Rotter catheterized the patients before the test and introduced into the bladder 250 cc. of a sterile, tepid physiologic solution of sodium chloride. In comparing his results with those of Goldstein and Erber he says that, whereas Goldstein and Erber observed an accelerated elimination of uranin in patients with gastric or duodenal ulcer, he observed a retardation. He found that the time after which the physiologic solution of sodium chloride that is introduced into the bladder shows noticeable fluorescence is influenced by many factors that may cause a disturbance. He thinks that the most important of these factors are the anatomic impairment of the gastric mucosa by a chronic inflammation and the readily influenced secretory function of the kidney, whereas the acidity values of the mediums that dissolve the uranin apparently exert no essential influence on the outcome of the test. Moreover, the fact that the mucosa

of the small intestine absorbs the dyestuff in the same measure as does the gastric mucosa shows that the method is not really a test of the gastric function. The author concludes that the uranin test cannot be recommended as an auxiliary functional test of the stomach.

Policlinico, Rome

45: 165-216 (April 1) 1938. Medical Section

Cushing Syndrome from Trauma. F. Introna.—p. 165.

Extrarenal Azotemia in Diseases of Nervous System. D. De Paolis.—p. 182.

*Meningeal Reactions from Serum. F. Rocchi.—p. 187.

Meningeal Reactions from Serum Therapy.—Rocchi discusses the significance of the meningeal reactions which follow intraspinal injections of heterologous serum and the danger of the reactions which take place in the course of serotherapy in epidemic cerebrospinal meningitis. He followed the behavior of the meningeal reactions which took place in the course of intraspinal injections of heterologous serum in patients who were suffering from poliomyelitis, tetanus and meningococcic meningitis. The meningeal reaction takes place whether or not the meninges are inflamed. The reaction develops within twenty-four hours of the injection, reaches its greatest intensity in two days and diminishes or disappears in a week. Even though further intraspinal injections of serum are administered, the reaction disappears. The meningeal reaction may include the appearance of clinical meningeal symptoms in association with changes of the cytology of the cerebrospinal fluid or only the latter. The cytologic reaction consists in a predominant polynucleosis in the cerebrospinal fluid with a few histiocytes. The clinical symptoms and the colloidal reactions of the cerebrospinal fluid are of a meningitic type. Glycorrhachia is normal. General symptoms of serum anaphylaxis may develop in the course of the reaction, but in all his experience the author has never seen meningeal anaphylaxis. He classifies the meningeal reactions from intraspinal serum therapy as immediate (clinical and cytologic) and late (general or focal anaphylactic) reactions. He suggests the name "meningosis" for the meningeal serum reactions. The nature of this reaction, either toxic or anaphylactic or showing an aggravation of meningococcic or suppurative meningitis, can be ascertained by the cytology of the cerebrospinal fluid. The polymorphonuclear leukocytes, which are in abundance in the cerebrospinal fluid during the meningeal reaction, are well preserved and take a stain normally when there is no meningitis. Pus shows in the cerebrospinal fluid by the Cesaris-Demel reaction when there is meningitis. The author concludes that toxic or anaphylactic reactions from serum do not develop as frequently as believed and that the fear for the development of the reaction is not an obstacle in administering a prolonged serum treatment in epidemic cerebrospinal meningitis.

45: 153-200 (April 15) 1938. Surgical Section

Late Results of Surgical Interventions in Gastroduodenal Ulcer. A. Casini.—p. 153.

*Action of Antivirus in Experimental Pleurisy. P. Stefanini.—p. 173.
Familial Osteogenic Exostoses, Associated in a Case with Bilateral Dyschondroplasia and Solitary Enchondroma of Pelvis. M. Teramo.—p. 185.

Antivirus in Experimental Pleurisy.—Stefanini says that antiviruses are nontoxic substances which inhibit the development of specific bacteria "in vitro" and cause local immunity when they come in contact with organs and tissues of living bodies. The author studied the action of a staphylococcus antivirus on experimental staphylococcic pleurisy in rabbits. He found that the intrapleural injection of a dose which may vary from 1.5 to 3 cc. of a twenty-four hour bouillon culture of *Staphylococcus aureus* induces an acute purulent pleurisy with death of the animals in three days. Intrapleural injection of doses varying from 4 to 6 cc. of the antivirus, twenty-four hours before injection of from 2 to 3 cc. of the bouillon culture of staphylococcus, prevents development of pleurisy. The animals survive the experiment and when they are killed do not show pleuropulmonary lesions. If the antivirus is intrapleurally injected at the same time as bouillon culture, pleurisy may be prevented, provided the quantity of antivirus is larger than that of the culture (one part of bouillon culture to six parts of antivirus). If antivirus is injected in the course of pleurisy, the

evolution and acuteness of the disease are not modified. The duration of life of the animals in this group is not prolonged in comparison to that of the control animals. The author concludes that staphylococcus antivirus causes local immunity in the pleura. The antivirus has an immunizing effect on the pleura and not a therapeutic effect on pleurisy. Therefore it has no clinical application in pleurisy. However, it can be of use in preventing metapneumonic and parapneumonic empyema in the course of pneumonia or bronchopneumonia. He advises the preparation of "stock" antivirus from bacteria that most frequently cause pneumonia and bronchopneumonia. The use of a given antivirus will be decided from the report of the bacteriologic examination of the sputum in each case. Intrapleural injections of "stock" antivirus will also be indicated immediately after lobectomy and pneumonectomy to prevent postoperative pleural infections. Doses of antivirus for the last mentioned purposes are not as yet determined.

Revista Sud-Am. de Endocrinol., Buenos Aires

21: 193-254 (April 15) 1938

Unknown Points of Neurohumoral Doctrine: Inversion of Effects of "Chemical Mediators." U. Lombroso.—p. 193.

Early Results of Treatment by Blood Serum of Testicular Vein of Oxen in Psychosis. R. Melgar and J. L. Peluffo.—p. 202.

*Bulgarian Treatment in Postencephalitic Parkinsonism. A. Gandellini.—p. 218.

Biochemical Mechanism of Shock from Insulin and Metrazol. J. Cuatrecasas and A. A. Bruno.—p. 224.

Bulgarian Treatment in Postencephalitic Parkinsonism.—The Bulgarian therapy of parkinsonism consists essentially in the daily administration of a 5 per cent decoction of atropa belladonna in white wine, administered three times a day in doses of 5 cc. to patients under 15 years of age and of 15 cc. to patients over 15. The treatment includes also the administration of a bland diet, suppression of stimulants, hygienic practices, gymnastics, reeducation of patients and sometimes orthopedic corrections. Gandellini treated 150 cases, in 120 of which improvement occurred to a greater or lesser degree.

Archiv für klinische Chirurgie, Berlin

191: 237-546 (March 8) 1938. Partial Index

*Lipophage Disease of Knee Joint (Lipophage Synovitis and Lipophage Granuloma) New Disease of Knee Joint and of Joints in General. M. Biebl.—p. 237.

Treatment of Fractures and Pseudarthrosis. E. Birt.—p. 327.

Pathogenesis and Nature of Perthes's Disease. S. Nagura and S. Kosuge.—p. 347.

Lymph Node Metastases of Cutaneous Cancer of Nose and Forehead. J. Körbler.—p. 421.

Relations Between Adenoma and Carcinoma of Prostate. B. Bibus.—p. 427.

*Production of Venous Stasis and Its Action on Pulmonary Lobes, as New Surgical Treatment of Pulmonary Tuberculosis. R. Valkányi.—p. 504.

Lipophage Disease of Knee Joint.—Biebl says that, although the lipophagic granuloma in its nonarticular localizations has been thoroughly investigated, the lipophagic disease of the knee joint is unknown in the medical literature. He describes two cases of lipophage disease of the knee joint. In both the disorder was posttraumatic and gave the impression of a relapsing effusion into the joint. The author surveys the literature on the clinical aspects, pathology, etiology, morphology, morphogenesis and localization of the lipophagic disease process, including the paraffinoma, oleogranuloma and transplantation of fat tissues. In lipophagic disease of the knee joint, which includes lipophagic synovitis and lipophagic articular granuloma, the author was able to demonstrate that the small cyst or cavity formations which are typical for lipophagic granuloma are at least partly of lymphogenic origin. The author suggests that lipophagic disease of the joints is probably always posttraumatic and derived from a lipohemarthrosis. It may involve any joint but is found chiefly in the knee joint. The author thinks that active puncture treatment of hemarthrosis is important for the prevention of lipophagic disease of the joints. The clinical manifestation of lipophagic disease of the knee joint is chiefly a chronic relapsing effusion after a trauma. In every posttraumatic relapsing effusion into the knee joint, the development of a secondary lipophagic disease should be thought of. The disorder may heal spontaneously and with the aid of symptomatic treatment. If under the influence of conservative treatment there is no improvement, danger of a chronic impairment of the

knee exists. In some of the disorders of the knee joint which are referred to as chronic villous synovitis or as hemorrhagic synovitis and which often date back to a trauma of the knee, an essentially lipophagic genesis is to be suspected. Moreover, one or more described or multiple intra-articular xanthomas or xantho-granulomas or xanthomatous giant cell tumors or sarcomas of the knee and ankle joints, which likewise can frequently be traced back to a trauma of the knee, may originally have been of lipophagic genesis. In case of chronic relapse of an effusion of the knee joint, which two or three months after the trauma has disappeared neither spontaneously nor in response to conservative treatment, surgical intervention is indicated. Operative treatment of lipophagic articular disease may produce a complete cure. During the early stages of the disease the intervention should be limited to the partial excision of the intra-articular disease foci. The hyperemia induced by the surgical intervention favors the complete cure. The cases of lipophagic disease of the knee joint which have become chronic require radical synovectomy.

Venous Stasis as Surgical Treatment of Pulmonary Tuberculosis.—After citing the shortcomings of Bier's and Kerschner's methods of the artificial production of stasis hyperemia in the treatment of pulmonary tuberculosis, Valkányi describes his own extrapleural, transpericardial, that is, extra-focal, selective procedure, which is really not a pulmonary operation but rather a cardiac intervention, aiming at cure of the lung. In this connection the author points out that thoracoplasty, for instance, is likewise not a pulmonary operation but rather an intervention on the thoracic wall. He gives a detailed description of the technic of his lobovenoligature with illustrative diagrams. Describing the intervention on the left side, he says that he makes a transverse, slightly curved incision in the second intercostal space, which reaches from the left sternal rim to the anterior axillary line. The sternal attachment of the thoracic musculature is pushed aside, and after the second and third costal cartilages come into view they are resected together with from 5 to 7 cm. of the respective ribs. The mammary artery and veins are ligated twice and sections (from 1 to 2 cm.) are resected. The posterior articular ligament of the two sternochondral joints is cut into and the sternal attachment of the intercostal musculature is severed and pushed aside. The endothoracic fascia and the transverse thoracic muscles are lifted from the pleura and incised. After the pleura has been mobilized it is pushed aside and a narrow strip of the mediastinal fat tissues and the pleura of the other side come into view. Farther downward, the mediastinal fat tissue becomes wider and passes into the pulsating pericardium. The latter is opened at the lower angle of the incision, at the level of the fourth costal cartilage, behind the sternum. The opening is lengthened to the level of the second costal cartilage. At the level of the upper rim of the third costal cartilage an incision is made which is vertical to the pericardial incision. An anesthetizing fluid is injected into the exposed phrenic nerve. The left lip of the pericardial opening is drawn to the left and the heart is pushed carefully to the right. In the upper angle of the opening, the bulb of the pulmonary artery as well as its left branch become visible, and deeper down and in the caudal direction the left upper pulmonary vein is reached, which is ligated. After mentioning the closing sutures, the author describes the procedure on the right side, which is slightly more difficult. He emphasizes that the rather difficult surgical technic necessitates considerable practice on cadavers. He performed this operation on five patients, one of whom died. In another patient, the operation produced no improvement in the pulmonary process. In this case the process had existed for a long time and the pulmonary lobe had a number of cicatrized cavities. The author thinks that in such cases the venous ligature is not advisable. In one case, with a cavity in the upper lobe, ligation of the vein produced cure in from four to five months. In two other cases he obtained improvement, and in one of these complete cure may be expected. The heart was watched carefully after the operations, but in none of the four surviving patients was a permanent impairment observed. Electrocardiographic tests made two weeks after the operation and repeated several times always dis-

closed normal heart action. The mode of action of the lobovenoligature is not completely understood as yet. At any rate its action differs from that of collapse therapy, particularly thoracoplasty. The venous stasis does not cause shrinkage or a compression of the cavernous walls, but a network of strands develops and the cavity becomes filled out.

Acta Obstet. et Gynec. Scandinavica, Stockholm

18: 1-123 (No. 1) 1938. Partial Index

- Some Cases of Hemorrhagic Metropathia and Secondary Amenorrhea Treated with Gonadotropic Substance. E. Rydberg.—p. 1.
- *Causes of Fatalities During Labor: Statistics of Women's Clinic in Helsingfors. L. Leidenius.—p. 24.
- Gestation Apoplexy Without Albuminuria: Case. A. Apajalhti.—p. 31.
- *Premature Rupture of Membranes. P. Wetterdal.—p. 45.
- Can Histologic Structure of Fetal Membranes Influence Time of Rupture of Bag of Waters? A. Apajalhti.—p. 57.
- Endocrinologic Studies on Rats with Bisected Stalk of the Hypophysis. A. Westman and Dora Jacobsohn.—p. 99.

Fatalities During Labor.—The statistics presented by Leidenius include all fatalities that occurred in pregnant, parturient and puerperal women during the two decades from 1914 to 1933 at the obstetric clinic of the University of Helsingfors. The total number of deliveries was 47,793. In order to determine whether the mortality rate underwent changes, the material is divided into two groups, the first one comprising the material of the first decade (1914 to 1923), the second one that of the second decade. During the first ten year period the number of deliveries was 22,196. The total mortality during this period was 0.45 per cent. Among the fatal cases there were a considerable number in which not the process of gestation but conditions such as tuberculosis or pneumonia were the cause of death. The latter mortality is referred to as "indirect." During the first decade the indirect obstetric mortality amounted to 0.11 per cent, the direct one to 0.34 per cent. During the second decade the number of deliveries was 25,597 and the total mortality was 0.38 per cent, of which 0.05 per cent was indirect and 0.33 per cent direct. The most important causes of death in the two groups were respectively infection 61.8 and 45.9 per cent, toxemia 23.7 and 27.1 per cent, hemorrhage 9 and 8 per cent, cardiac defects 5 and 12 per cent and embolism two and four cases. About 50 per cent of the patients who died were already infected or even moribund at the time of hospitalization. If these cases are excluded the total mortality is 0.18 and 0.17 per cent, respectively. In the concluding discussion the author directs attention to the importance of heart disease as a causal factor in obstetric mortality. He also stresses the necessity of supervision and financial aid during the period of pregnancy and he recommends the foundation of maternity hospitals that are within reach of every pregnant woman.

Premature Rupture of Amnion.—Wetterdal bases his discussion on 1,022 cases in which the liquor amnii was discharged before the beginning of labor. He distinguishes two categories: cases in which the delivery is quick and which present only few complications and cases in which the delivery is slow and the complications are numerous. Particularly risky are the cases in which faint ineffective pains set in shortly after the passage of the waters. The author is of the opinion that the ineffective pains and not the premature rupture of the membranes is the primary factor in such cases. An examination of 150 cases in which the waters escaped before the onset of the pains shows that in some of these cases uterine contractions occurred even before the perceptible pains began but that in the majority of cases no labor pains can be traced to the time of the passage of the liquor amnii. Consequently the suggestion that the rapid deliveries in cases of premature rupture of the bag of waters are due to the fact that a smaller or larger portion of the process of labor has already taken place before the rupture of the membranes cannot be applied to all cases. In 312 cases in which the waters escaped before the onset of the pains, studies were made on the primary and late mortality as well as on the physical and mental development of the children up to the age of 12. These 312 cases comprise 221 spontaneous deliveries and ninety-one forceps deliveries. A comparison with figures from an earlier report show that the premature escape of the waters influences neither the mortality nor the percentage of mental or physical defectiveness in the children.

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THE AIMS OF THE MEDICAL PROFESSION AS THEY RELATE TO THE PUBLIC

PRESIDENT'S ADDRESS

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The doctor has long been considered an individualist; in some quarters he is still so regarded. This should be accepted as a compliment as far as the diagnosis, treatment and confidential relationships of private practice are concerned. The physician's absorption in and devotion to the development of the ever widening field of medicine, his concentrated interest in the solution of the problems presented by individual patients, his sense of personal responsibility in the welfare of each patient quite naturally tended to the growth of habits of mind and thought that characterized him as an individualist. Such a mental attitude has been and still is necessary in the practice of curative medicine, constituting an essential attribute in its successful application. The result of the application of a constantly growing medical knowledge has become as apparent to the patient as to the community, of which he is but a part. With this has come to the doctor a realization that as an integral and important part of the community his interests are far wider than those embraced in treating the individual. While this is still one of his major functions, the conception that it is his sole duty is narrow. To this function have been added others which to the public are of greater importance; namely, the maintenance of health and the prevention of disease. Now that social and economic changes have disrupted what were formerly regarded as established policies in both the social and the professional aspects of organized society, the physician finds other problems and duties to which professional responsibility demands that he give attention.

MEDICINE AS A PROFESSION

Medicine is a profession, the sole social reason for its existence being the service it can render humanity; financial gain is a subsidiary consideration. The American Medical Association was formed in 1847 with the avowed purpose of furthering the art and science of medicine and of rendering service to humanity. That service is further interpreted as the maintenance of health and the postponement of death. It is not a trade union and does not concern itself specifically with the rate of compensation, the hours and place of work: it

builds no trusts, founds no monopolies, excludes no qualified competitor and retains for its profit no worthwhile discovery; it engages in no political activity, calls no strikes and answers alike calls from the storm and windswept country, the streets of the village, the boulevards of the city and the desolate field of battle. It does observe the qualification of those desiring to engage in the practice of medicine, their integrity and probity. It demands that the medical service dispensed by every physician meet the standard which it has set; namely, that it be good medical care.

THE RISE OF PREVENTIVE MEDICINE

In view of the present agitation by would-be reformers, it is well to bear in mind that all the improvements in medical service during the past fifty years have been initiated in and put into operation by the medical profession without compulsion, political, governmental or otherwise. A consideration of your time and patience forbids detailed enumeration, but certain definite results may be mentioned. Plagues no longer decimate our population; the toll of the infectious and communicable diseases has been stayed; typhoid is all but a thing of the past; infant and child mortality have been curtailed and tuberculosis, formerly known as the Captain of the Men of Death, has been made to give ground until the mortality from it now is but one fourth that at the beginning of the century. There has been a reduction of 50 per cent in the total mortality and an increase of nearly 100 per cent in longevity—a truly remarkable social phenomenon.

MEDICAL EDUCATION

Medical schools, as a result of more stringent requirements, have been decreased in number, the courses of instruction augmented and prolonged, so that the graduate of today is a competent mentor for the sick. This contribution on the part of the American Medical Association to the elevation of the standard of American medicine has been made at the expenditure of much time, effort and money. The results of this outlay of its capital have fully justified the wisdom and altruism of such a course. The medical schools of this country today are equaled by but few and surpassed by none of other countries. Notwithstanding the increased educational standard, the number of graduates today remains the same as under the old régime in operation at the beginning of the century, while the output is of a superior quality, affording assurance of the maintenance of a higher standard of medical practice. The most valuable asset possessed by the medical profession is the constantly accumulating fund of knowledge in the minds and the literature of its members. Since "a profession has for its prime object the service it can render humanity," all its knowledge must

President's address before the American Medical Association at the Eighty-Ninth Annual Session, San Francisco, June 14, 1938.

be available for the attainment of that object. In directing the education of those who would enter its portals, the medical profession is but fulfilling its responsibility to the public not only in making its fund of knowledge available to the student but in requiring of him evidence that he has acquired it in sufficient amount to make him a safe exponent of its dispensation. Hospitals of fifty years ago were but boarding houses providing creature comforts for the sick; today they are institutions affording not only ample accommodation but, as well, trained personnel, technical equipment, adequate nursing, competent staffs and means for carrying out scientific procedures. These attributes insure an efficient service meeting the requirements which modern medical knowledge and humanitarianism demand as the unequivocal right of the sick at the hands of those to whom they entrust their welfare. Medicine with its component special fields has advanced until it has become more and more a science, its accumulated knowledge being dispensed through and with the art of its votaries. Approximately twelve million patients are treated yearly in the hospitals of this country with a mortality, in the approved hospitals, of slightly less than 4 per cent. When one considers that this covers all known causes of death, there is reason for gratitude that modern medicine has surrounded hospitalization with such effective safeguards. These improvements in medical education and in hospital service have entailed the expenditure of more than a million dollars by organized medicine and represent a contribution in service of no little import to the welfare of our fellow citizens.

THE PROBLEMS OF PSYCHIATRY

Psychiatry throughout the past century has been a veritable *terra incognita*: only when the injunction *sit lux* of modern science was applied to it has it emerged from the gloom and darkness with which it was enshrouded. Asylums were but domiciliary institutions for the confinement of the mentally ill. From these archaic structures modern hospitals are arising, staffed by competent personnel, registered nurses and aiders versed and trained in psychiatry, meeting the challenge of the disordered mind with an orderly mind skilled in the application of scientific, psychiatric knowledge. In some measure dementia paralytica is responding to fever therapy, dementia praecox to insulin and metrazol shocks, involutional melancholias to endocrine therapy. Functional psychoses are being corrected. As a result the percentage of restorations to community life shows a yearly increase.

THE GENERAL PRACTITIONER AND PREVENTIVE MEDICINE

While the major responsibility for preventive medicine devolves on the United States Public Health Service and the state and local health officers, the physician in practice has come to a realization that his obligation to society demands an extension of activity beyond the intimate personal relationship between the individual patient and himself to the broader field of preventive medicine. He is widening his sphere of responsibility from the care of patients to that of the community of which the patients are a part. Sanitation, immunization, maternal and child welfare, antepartum care, public health nursing, mental and social hygiene are a part of this program. An interested public participates through many worth while organizations, of which the Society for the Prevention and Control of Cancer,

the National Tuberculosis Association, the League for the Prevention of Blindness, mental hygiene and parent-teachers associations and others are doing excellent work. Legal enactments permitting sterilization of the unfit and requiring a clean bill of health on the part of those who would enter the marriage state, while more specifically in the field of eugenics, give further evidence of the interest of the public in this general program. Today a large bulk of scientific medical measures of vast value in both preventive and curative medicine must wait until the level of the intelligence of the people is prepared to accept them. Schaudinn in 1905 discovered *Spirochaeta pallida*, Wassermann in 1906 introduced the serum diagnosis of syphilis, and Ehrlich and Hata in 1910 discovered arsphenamine: yet only in 1937 was the word syphilis permitted in the public press and on the radio. For years every physician has sensed the ravages of the social diseases and the beneficent results that would follow their eradication or control, but it remained for Surgeon General Parran to force this recognition on a prudish, recalcitrant public. It has been truly said that preventive medicine forms the keystone of the triumphal arch of modern civilization, since the prevention of disease, and therefore the prevention of suffering and death, is a more important and glorious achievement than the cure of the individual or the reduction of mortality from a given disease. A noteworthy accomplishment, largely attributable to prevention, has been the increase in life expectancy, which now stands at 61 years, indicating that we are slowly developing a society in which old age with its degenerative conditions will represent a constantly increasing percentage of disease.

GRADUATE EDUCATION AND THE SPECIALIST

The growth and development in the art and science of medicine during the present century have been unprecedented: its accumulation has been so rapid and so extensive as to upset all previous conceptions both as to its acquisition and as to its distribution. Not only is the recent graduate perplexed in preparing himself for a special career in medicine, but the graduate of some years who has not kept abreast of the current finds himself woefully lacking in the newer knowledge and procedures, with a consequent failure in understanding of their principles, application and usefulness. Realizing the elimination of this deficiency to be one of its obligations to the public as well as to the profession, organized medicine is providing ways and means of graduate education for those who desire to become specialists and opportunities for the further training of those who are not specialists. In the past the term specialist has been loosely applied. While many had taken the training to fit them for such an appellation, there were those whose only claim to such distinction was a vocal one. In the future the stamp of approval of the various specialty boards will clearly indicate both to the profession and to the public those who have taken the requisite training and who have given a satisfactory demonstration of their fitness before obtaining certification as specialists.

HOW ORGANIZED MEDICINE PROTECTS THE PUBLIC

The American Medical Association maintains a number of bureaus whose activities are directly concerned with public welfare. The Bureau of Health and Public Instruction is specifically concerned in the dissemination of health information to the public by

means of correspondence, by cooperative relationships with organizations interested in public health, by radio through network programs and by service to the public in answering by mail the many thousands of questions coming to it annually. Methods have been devised for the protection of the public health and put in operation through the Council on Pharmacy and Chemistry, the Council on Foods, the Bureau of Investigation, the Council on Physical Therapy, and to a lesser extent in other departments in determining and enforcing standards of value and of advertising used in the sale to the public or to physicians of various articles and services purporting to be of value in the maintenance of health and in the treatment of disease. The rules adopted by the Council on Pharmacy and Chemistry illustrate the application of a system of ethics based on the supreme good of protecting public health. They bar all secrecy as to ingredients and demand that claims be supported by scientific tests, that all advertising must be truthful and that drugs the administration of which should be accompanied by medical diagnosis and supervision be not sold directly to the public. These are simple, straightforward rules the social desirability of which in the whole field of advertising few would dare openly to deny. It is equally axiomatic that they could be made legal only against the strongest possible opposition from those who profit by deceiving the consumer.

DISTRIBUTION OF MEDICAL SERVICE

In the economic upheaval and resultant change in the social and economic structure of our country in the past few years, much has come about that is at wide variance with what heretofore has been regarded as fixed and established policies. There has been a tendency to impress commercial and financial patterns on all features of society, including medicine. A corollary of the tendency to emphasize mechanical devices is the attempt to standardize medical procedures and to provide them on a low cost, mass production scale. Such attempts are based on the belief that a human being can be regarded as a uniform, standardized organism. This is a fundamental fallacy; no two people react in the same way to the same disorder. There is no way to standardize the infinite variety of human beings in health and disease. There has been abuse and criticism of the medical profession with an insistent demand that it propose a plan for a wider distribution of medical service. The difficulties of supplying needed medical care differ almost as widely as do the states constituting this vast nation. Our population is not homogeneous: the labor element recruited from various European countries congregated in the cities of the North and East differ materially from the Negro of the South and from the labor population of our Southwestern states. The geographic distribution of population and of hospital and medical facilities varies from the densely inhabited Northeast to the sparsely settled South and West. The economic level in the various counties and states of the nation alternates from pauperism to opulence. To formulate a program to meet the actual needs of the indigent and partially indigent is no simple task. The trial and error experience with social and economic programs on the part of the federal government in recent years affords ample proof of the difficulties and disappointments encountered. When we face the fact that social and economic factors are inextricably bound with the distribution of medical service to the indigent and partially indigent, the intricacies of the problem become apparent. Organ-

ized medicine from prolonged and intimate observation is fully cognizant of the social and economic needs that lie so heavily on the indigent and the low income groups; while willing and solicitous to do its share in their care and rehabilitation by supplying good medical service to those who require it, the profession of medicine does not feel it a responsibility to initiate or sponsor measures looking toward social and economic reformation. At the same time it resists efforts and proposals that would include and regiment its services under lay or political control for the accomplishment of these ends. There is no definite means of computing in monetary valuation the service voluntarily rendered these groups during the past eight years, but from such data as are available a fair estimate based on a minimum fee schedule would place it in the neighborhood of a million dollars a day, a contribution not equaled or exceeded by any agency other than the federal government. Surely this offering for the public good would indicate that medicine has more than fulfilled the obligation implied in its Principles of Medical Ethics to give of its services to the needy and that as a profession our ideal and our aim have been the provision of service rather than solicitation for compensation. During this period more than 250 plans for the distribution of medical service to the low income groups have been tried in various parts of the country, and as a result much useful data and information have been accumulated. Organized medicine insists on a high standard of value in medical service. Any plan or proposal for wider distribution must be judged on its consonance with good public policy and the maintenance of such a standard.

DEFECTS OF STATE MEDICINE

A study of state-controlled medicine in other countries judged by these standards shows the following defects:

1. There is no decrease in the cost of medical care: the system adds a staggering administrative cost.
2. Public health and preventive medicine are not assisted or advanced.
3. Overmedication is encouraged.
4. The burden of cost is distributed over the low income class, which is least able to bear it.
5. Medical care for the indigent is omitted.
6. Graduate education is not encouraged.
7. The hospital load is increased and hospitals are encouraged to practice medicine.
8. Diagnosis and treatment are mechanical and superficial.
9. Medical service becomes a political issue and its control is placed in the hands of unqualified nonmedical workers and organizations.

These are only a few of the characteristics of the systems of state-controlled medicine. Even at its best do the American people and the American physicians want such a system?

CRITERIA OF GOOD MEDICAL SERVICE

The medical profession has not discharged its entire obligation to society by healing the sick and preventing disease. Its broader obligation lies in a concerted determination and effort to preserve that form of medical practice which best conforms to good public policy and which will perpetuate the free, independent, scientific and ethical institution of medicine. It must vigorously resist all efforts that are likely to provide sick people with the mere dregs of a medical service or that are destined to reduce medicine to serfdom. Any proposed change is to be evaluated by certain criteria.

Would it provide better doctors than are now available?

Would it make good medical care more available to the indigent, the unemployed and the low income groups?

Would it enable physicians to devote more time to the care of the individual patients, especially to the seriously ill patients?

Would it provide more time and more inducement to physicians to keep up to date in their professional work by postgraduate study and clinical work?

Would it eventually reduce the average duration of illness in the United States?

Would it maintain or improve the present standards of preventive medicine?

Would it continue to attract the highest type of men and women into medicine as a life work?

Would it reduce or increase the national cost of medical service?

The American Medical Association with the cooperation of county medical societies, state and local health agencies, hospital authorities, the dental, nursing and correlated professions, welfare agencies and community chests has been prosecuting a vigorous study in each county of the entire country in order to determine the prevailing need for medical and preventive medical service, where such may be insufficient or unavailable. In other words, it is fulfilling its mission in a way characteristic of the doctor, the American public being the patient and organized medicine being the attending physician. When careful search has revealed the diagnosis, appropriate treatment will be applied. Efficient and ethical means can then be devised for the distribution of medical services to all people on the basis of need rather than to small groups within the population according to political expediency or special interests. Thereby it becomes possible for organized medicine to act specifically as a clearing house in the initiation, development and functioning of what may well evolve into a comprehensive system of medical care for all the people according to the American plan of medical practice.

THE AIMS OF THE MEDICAL PROFESSION

The aims of the medical profession as they relate to the public may be briefly summarized:

1. Maintenance of the present high standard of medical education, affording assurance that the graduate is competent to care for the sick.

2. Adequate provision for graduate education, with specified training for the development of specialists, and continued training for those who are not specialists so that the level of professional efficiency may be raised.

3. Extension of public health and preventive medicine to cover the field adequately.

4. Continuation of the practice of ethical scientific medicine on its present high plane.

5. Protection of the public against medical frauds falsely labeled foods, drugs and appliances.

6. The widest possible dissemination of health information to enable the public to act intelligently in the preservation of its health and in the prevention of disease.

7. The development and consummation of plans for extension of medical service to all groups of the population consonant with our established high standard of quality.

321 West Broadway.

IMPORTANCE OF RESTORATION OF BLOOD SUPPLY IN FRACTURES OF NECK OF FEMUR

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The subject I have chosen for this paper is the question of blood supply in fractures of the neck of the femur. Because of the possibility of inadequate blood supply, it is my belief that the treatment of this fracture is a special problem differing from that of all other fractures. It is the most unfavorable of all fractures as to union, so unfavorable that Dr. Kellogg Speed of Chicago, when invited to deliver an oration on fractures before a recent congress of the American College of Surgeons, chose this particular fracture as his subject, designating it "the unsolved fracture." It may also be noted that Sir Ashley Cooper went on record as having said that he had never seen a fracture of the neck of the femur that had united.

The British Commission on Fractures has reported 22 per cent of union in all types of treatment of fractures of the central neck of the femur. In 1929 and 1930 a committee of the American Orthopedic Association studied this problem, making a survey of certain clinics in which as low a figure as 30 per cent of union was claimed. Two hospitals in New York have within the past four months announced statistics showing 38 per cent of union, while a third hospital reported 46 per cent. In this connection, a point worthy of note is that all three hospitals reported 20 per cent of aseptic necrosis of the head in cases coming to union, to such a degree that the condition simulated osteoarthritis with flattening and mushrooming and with symptoms so acute that in most cases arthrodesis of the joint was necessitated. Therefore, even when union is effected, the question is still unsettled as to whether the blood supply to the capital fragment is sufficient to prevent aseptic necrosis.

In 1902 Murphy first published statistics concerning the use of his metal nail as a fixation agent. It was a good, well machined square nail and superior to some varieties of recent origin. Since I began practice in 1904 many patients have come to me for treatment of nonunion after this and other types of nails had been used. Eventually this nail went completely out of use and was practically forgotten, until twenty-five years later, when an avalanche of nails, bolts, needles and screws of multitudinous variety appeared. Recorded experiences such as these and many others have resulted in much discussion of this subject in medical and surgical circles.

It would indeed be difficult today to catalogue all the types of treatment recommended for fractures of the hip. In general, they may be classified under two headings: the conservative, or nonoperative, and the operative. In the former category one may mention the names of Whitman, Leadbetter and Maxwell Ruth among others. The latter category can again be divided according to the different applications of metal gadgets used for internal fixations. One of these, recently announced by Dr. Morrison, is extremely clever and ingenious. It consists of a bolt or big nail with an internal contrivance inside that leads to the head of the bolt; after insertion into the head of the femur the extreme end of the bolt can be opened like a small

From the Florida Medical Center.
Read before the American Association of Railway Surgeons, Chicago,
Sept. 22, 1937.

umbrella, thus insuring firm fixation into this fragment; the fragments are then firmly approximated by twisting the screw at the proximal end of the bolt.

The crux of the situation is that members of the profession have failed to recognize the fact that a subcapital fracture of the hip is a different problem from that of other fractures and, in failing to recognize this, they have assumed that mere reduction and maintenance of the fragments in position were all that was required. For nearly twenty years I¹ have contended that this was not all but that there were other factors entering into this particular fracture problem. A study reveals an unusual situation, the importance of which, strange to say, has never been appreciated, considering that success or failure of treatment depends on the recognition and overcoming of the difficulties disclosed. The capsule of the hip joint is attached to the neck of the femur obliquely and close to the base of the neck, and therefore a subcapital or central fracture of the neck of the femur is completely intra-articular. If it is completely intra-articular, then all possible sources of blood supply coming to the fragment of the head from the trochanter region of the femur or distal to the joint are cut off. This being so, the ligamentum teres can be the only remaining source of blood supply. The question then arises as to whether the ligamentum teres does in all instances, when not torn, provide an adequate source of blood supply. Wolcott and others have attempted to evaluate this by injecting the blood vessels of the ligamentum teres with mercury in cadaver specimens. This research has proved extremely interesting. In 15 per cent of cases Wolcott could not find blood vessels in the ligamentum teres of sufficient size to allow mercury to flow through them into the head or neck of the femur, and Henderson claims as high as from 20 to 25 per cent. So much for this.

The next question to be considered is the possibility of the ligamentum teres or its blood vessels having been destroyed by the trauma producing the primary fracture, and in this regard there are some very important observations not to be overlooked.

During the past twenty-five years I have performed 413 reconstruction operations for nonunion with marked absorption of the femoral neck and have in each case removed the head of the femur. Some of these were during the period of my service in the Great War. A careful check was always made by myself and my associates of the condition of the ligamentum teres at the time of the operation, and it may seem surprising that in 411 of these cases we found not the slightest evidence of bleeding at the cotyloid notch where the ligamentum teres is inserted into the acetabulum, which would have occurred if the ligament had been evulsed or torn at operation. In more than 70 per cent of cases, all ligamentous tissue appeared to have been evulsed from the cotyloid notch; in the remaining cases tabs of ligamentous tissue were found attached to the cotyloid notch of the acetabulum and fovea of the head of the femur or both. In two cases the ligamentum teres was found intact. In one of these the fracture was found to be at the center of the neck and due to a rifle bullet which was discovered at operation between the ununited fragments. The thought occurred to me that, since the neck of the femur was severed by a bullet, it might at the time have produced shock with its resultant muscle flaccidity. Therefore the muscle spasm incident to the usual fracture did not occur and

force the distal fragment of the femur upward, thus rotating the head in the acetabulum upward on the outside and the fovea of the head downward on the inside, to such a degree as to tear or evulse the ligamentum teres (fig. 1). This assumption is strengthened by the fact that the capsule is loose and alone determines the extremes of motion of the joint when the bony framework of the joint is intact.

It is believed that the rotation of the head which tears the ligamentum teres is brought about by the concerted spasmodic contraction of two powerful groups of muscles at the time of fracture. While the inward and outward rotators of the hip pull mesially on their osseous insertion (the great trochanter), holding the fracture surfaces of both capital and distal fracture fragments together, like the cogs of cog-wheels, at the same time the more powerful muscles force the distal fragment upward, rotating the fracture end of the spherical capital fragment upward and the fovea side of this head fragment downward, in this way tearing or evulsing the ligamentum teres.

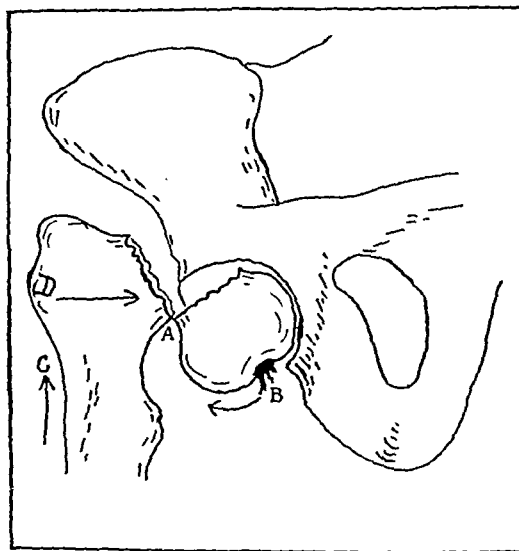


Fig. 1.—Diagram showing direction of forces which produce rotation of capital fragment with resultant rupture or shearing of the ligamentum teres. Arrow at C indicates femur forced upward by trauma or muscle spasm, or both. Arrow at B indicates direction of rotation of head by the displacement upward of the femur because of contact of fragments at A, which is brought about by spasmodic pull of inward and outward rotator muscles on the trochanter in the mesial direction, as indicated by arrow D.

The anatomist Frederick Henry Gerrish² makes the following statement:

The ligamentum teres (round ligament) is not round, but a triangular, flat interarticular band attached by its apex to the upper half of the depression on the head of the femur, and by its base to the transverse ligament and the margins of the cotyloid notch, the ischial portion being the stronger. It is surrounded by synovial membrane, and represents a migrated portion of the pectineus muscle. It conveys a small branch of the obturator artery to the head of the femur. It is torn in dislocation of the femur.

The ligamentum teres is put on the stretch in flexion with abduction or outward rotation, or both, but it is too weak to be of use in resisting these movements or in strengthening the joint.

Dr. Henry Gray³ writes as follows:

The ligamentum teres femoris is a triangular, somewhat flattened band implanted by its apex into the anterosuperior part of the fovea capitis femoris; its base is attached by two

2. Gerrish, F. H.: *A Textbook of Anatomy*, Philadelphia, Lea Brothers & Co., 1899, p. 232.

3. Gray, Henry: *Anatomy of the Human Body*, Philadelphia, Lea & Febiger, 1924, p. 338.

1. Albee, F. H.: *Orthopedic and Reconstruction Surgery*, Philadelphia, W. B. Saunders Company, 1919.

bands, one into either side of the acetabular notch and between these bony attachments it blends with the transverse ligament. It is ensheathed by the synovial membrane, and varies greatly in strength in different subjects; occasionally only the synovial fold exists, and in rare cases even this is absent.

Still another authority, Dr. Gwilym G. Davis,⁴ may be quoted in this connection:

The ligamentum teres is composed of synovial and connective tissue. It is not strong and ruptures at about 14 kilos (30 pounds); the small artery it contains affords nourishment for itself alone, only a very small amount of blood going to the head of the femur. Bland Sutton regards it as a vestigial structure and a regression of the pectineus muscle. It is too weak to add much to the strength of the joint, and the view of Allis that its function is to distribute the synovial fluid and act as a lubricating agent is probably correct. The great pressure to which the articular surfaces of the hip joint are subjected requires special lubrication and this is furnished by the ligamentum teres and haversian gland.

From these studies, it is deduced that in the 411 cases of subcapital fracture the weak ligamentum teres

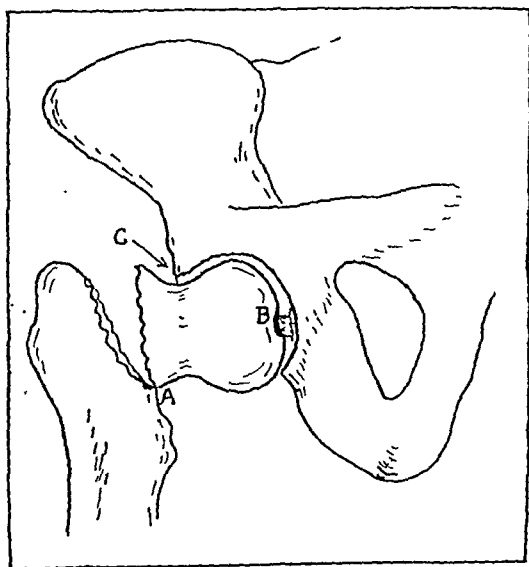


Fig. 2.—Diagram to show contrast with conditions in figure 1. In this instance, in which the fracture is at the base of the neck, rotation of the capital fragment to the degree of destruction of the ligamentum teres is prevented by the impingement of the outer portion of the neck of the femur at C against the rim of the acetabulum.

was destroyed by torsion or rotation incident to the explosive displacement at the time of fracture. The extreme force either evulsed the ligamentum teres from the acetabulum or head of the femur (more frequently it is the former) or ruptured the ligament by a twisting or shearing motion. After many months, or, as is often the case, many years, it is difficult to deduce accurately the circumstances associated with the destruction of the ligamentum teres. Varying degrees of fibrous adhesions to the periphery of the head are sometimes found, but, when severed in removal of the head, they have never been found to bleed to any appreciable extent, thus indicating that they have not been a source of blood supply to the capital fragment.

If this ligament has not been ruptured, there is every reason to believe that its continuity would serve to conduct induced collateral circulation to the capital fragment, even if anatomically the blood vessels were very meager in it.

It is my firm belief that in those cases coming to nonunion the destruction of the ligamentum teres at the

time of the fracture is the determining factor in the prevention of union. In other words, one is justified in coming to the conclusion that, when the ligamentum teres is destroyed, under such conditions the capital fragment becomes practically a joint mouse. Because of the intervening joint cavity, no blood supply can come to it, as in other fractures from adherent overlying muscles or soft parts. The fracture is wholly within the hip joint with very little soft tissue at the point of the fracture other than the torn synovial membrane on the neck itself.

A case bearing on this problem is under my observation at the present time:

The patient sustained at different times fracture of each hip. At the time of the first fracture, that of the right hip, there was no treatment at all. The patient lay in bed for a while and the hip united satisfactorily. Four years later the patient suffered a fracture of the left hip. It was treated and put in a Whitman spica cast by a competent surgeon, and roentgenograms taken at the time indicated excellent apposition of the fracture fragments. Nonunion followed, and fourteen months after the time of fracture the patient was seen by me and a reconstruction operation was performed. The capital fragment was removed, a wedge being made of it to reconstruct the lever at the top of the femur. On removal of the head it was found that the ligamentum teres had been destroyed.

The point to be emphasized in this case is that when the right hip was fractured the ligamentum teres probably was not destroyed and therefore union took place. When the left hip was fractured the ligamentum teres was probably torn, thus causing the blood supply to be cut off from the capital fragment and so, in spite of efficient Whitman treatment and immobilization, the fracture did not unite.

It can be further deduced that it is only in central or subcapital fracture that the mechanics is such that the capital fragment is permitted to rotate under the superior edge or roof of the acetabulum. When primary impaction occurs, there naturally cannot be extreme rotation or twisting of the head; therefore the ligamentum teres does not become torn or evulsed. This undoubtedly is one of the principal reasons, if not the determining reason, why such fractures are much more favorable to union. By the same token, it does not follow that secondary artificial impaction by the surgeon is of the same value because rupture of the ligamentum teres may already have taken place. When the fracture occurs farther out in the neck of the femur, especially when it is transtrochanteric, the fragment is so long that it cannot become rotated or twisted under the rim of the acetabulum (fig. 2); therefore the ligamentum teres does not suffer. Also if the fracture is so far out that it is partly or completely extra-articular, the adherent soft parts to the distal end of the capital fragment will prevent its rotation or torsion to such a degree as to rupture the ligamentum teres and also serve to convey blood vessels to the fracture junction of both fragments. There is thus a double reason for the tremendously increased difference in the percentage of union of such fractures as compared with the subcapital variety.

Realizing these facts, I worked out the use of the bone-graft peg in the treatment of ununited fractures and some years ago published statistics showing about 94 per cent successful results. About the same time Dr. Willis C. Campbell, using the same method, published statistics that were even better than mine. The significance of these results is extremely important, since Dr. Campbell and I were dealing with cases much more unfavorable than fresh fractures, first,

4. Davis, G. G.: *Applied Anatomy*, Philadelphia, J. B. Lippincott Company, 1913, p. 507.

because they were nonunions, or pseudo-arthroses; second, because the capital fragment had become practically a joint mouse, and, third, because the urge of primary repair had long ceased to exist.

It is further interesting to note that, through a fault in technic on my part in failing to approximate the fragments in three of these cases, we learned something of great significance concerning the function of the autogenous bone-graft peg. (When inserting the peg, I always attempt to impact the fragments.) In these cases the hiatus between the fragments (varying in extent from one-half to two-thirds inch) was spanned within the joint by the bone-peg alone. X-ray study of these cases at a later postoperative date showed that the peg constantly increased in size to the degree that it finally filled in the hiatus completely and that, in spite of the fact that the fragments were separated and the peg was situated in the joint cavity, blood vessels extended through it from the trochanter fragment to the capital fragment, the peg by its inherent osteogenesis having filled this space between the fragments with resultant union. The importance of this observation is self evident as showing the potentiality of the bone-graft under most unfavorable conditions. It is interesting to consider what would have happened had a metal agent been used. In this respect, however, it should be commented that in many instances I have observed that a graft has filled in spaces many times more extensive than in the cases cited—even to as much as sixteen times the dimension of the hiatus in any one of the cases, the only difference being that the long grafts were surrounded by soft tissue instead of spanning a joint space.

About four years ago Scudder, who is an authority on fractures, realized the importance of this question of blood supply in fractures of the neck of the femur and, in discussing a paper by Dr. Moorhead, suggested that the capsule be incised and the muscle tissue brought through the rent in the capsule into the hip joint, thus being brought in contact with a freshened surface of the capital fragment in order to bring blood supply to this fragment. This suggestion, to fill a part of the joint space with muscle by contact with the freshened areas, in the hope of bringing blood supply to the anemic head, does not seem very feasible. One approaches this suggestion with skepticism for the very pertinent reason that muscle tissue, even when temporarily cut off from the blood supply, changes to connective tissue, as is so well demonstrated in Volkmann's ischemic palsy. In fact, during the last twenty years I have seen several cases in which muscle tissue has proved to be the most unfavorable of all tissues to withstand temporary or prolonged loss of blood supply. In this connection one could cite cases of emboli, thrombosis and accidental severance of an artery; also extreme cases of interruption of blood supply from fractures such as at the elbow, where, instead of Volkmann's palsy with muscles turning into connective tissue, they merely sloughed. In all these cases the muscles were pulled out through the skin, which, as well as the bone and other structures of the extremity, had retained its vitality. The blood supply would indeed have a better chance of being reestablished after temporary anemia had been relieved in the muscles of the forearm than would be the case if a piece of muscle were pulled through a rent in the capsule of the hip.

Bone, being a supportive and relatively undifferentiated tissue, is able to suffer the absence of its blood supply for a considerable time without adverse effects

for the reason, among others, that it is extremely favorable for transplantation. The rapid and profuse vascularization of a bone-graft is one of the most striking features encountered. When a portion of the complete diameter of a long skeletal bone has been replaced by massive grafts of much smaller diameter, not only will the whole shaft be restored to its complete diameter and strength but also a completely vascularized marrow cavity will develop. The same phenomenon occurs in the use of a bone-graft as a terminal structure, such as in building digits, in which a tibial bone-graft is inserted into a tubular skin graft to restore a finger or thumb, which I have done many times. In this instance there is a physiobiologic demand for blood at the distal end of this bone-graft and in response a collateral circulation is developed in the whole length of the graft to the degree of a marrow cavity with its incident blood vessels. The analogy is identical to that of the peg graft conveying blood to the anemic femoral head from the very vascular cancellous tissue of the trochanter. These characteristics, as well as the osteogenic capacity of the autogenous bone-graft peg together with its mechanical strength (for immobilization purposes) determines it to be the ideal means of treatment in operable cases of both fresh and ununited fractures of the central intra-articular portion of the neck of the femur. It is the only answer to the tripod of necessity in the treatment of such fractures, for it first furnishes immobilization and, second, a living scaffold for vascularization to the anemic head fragment, and, third, it brings an osteogenic, callus-forming material to the fracture junction.

Sir Arthur Keith, the practical pathologist of England, has prepared an extensive number of specimens that are on exhibition in the Museum of the Royal College of Surgeons in London. The study of these specimens is most profitable. They are prepared and injected to show the profuse vascularization of bone grafts in general. In putting in bone grafts to take the place of portions of shafts of bone, my own experience has in many instances confirmed Sir Arthur's observations. These cases, which have been studied over a period of years, both by x-ray and by laboratory means, have demonstrated profuse vascularization and even the formation of a marrow cavity.

After most operations the period of immobilization in double plaster of paris spica casts is twelve weeks. The callus-forming capacity of the bone during that time is so low that one must allow a generous period of time for this to take place. Whether the bone-graft peg operation should be performed as the primary treatment is for the surgeon and his patient to decide. Some patients, of their own volition, have requested the operation.

To recapitulate, it is of great importance with every type of treatment, especially when any of the various kinds of metal fixation agents have been used, for the surgeon to be eternally vigilant in watching for the earliest evidence of the beginning of nonunion. If there should be any change of position in the relation of fragment to fragment, even of the slightest degree, this is evidence that union is not taking place. Very soon proof will follow with bone absorption at the neck of the junction of the fracture, indicating that there is an inadequate or total lack of blood supply and also that the ligamentum teres may have been ruptured or destroyed by a twist or rotation of the head at the time of fracture. In the latter event the capital frag-

ment is essentially a joint mouse. Under such conditions, if union is to be secured, immediate action is urgent. With the fragments in good position, a bone-graft peg of at least one-half inch diameter should be obtained, preferably from the crest of the tibia, and should be immediately inserted.

PSYCHOSIS AND THE CENTRAL AUTONOMIC NERVOUS SYSTEM

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In the study of patients with so-called mental diseases it has been perhaps inevitable, because of its prominence and overt expression, that primary emphasis should have been accorded to the form, or content, of the psychosis as a means of differentiating nosologic entities. Much admirable research into physiologic disturbances occurring as symptoms in mental illnesses has, however, rendered little service to their elucidation, mainly for the reason that the correlations which have been attempted are between the symptoms of the illness, on the one hand, and the person who is ill, on the other. It is my purpose in this article to present considerations for a reorientation of point of view, not with the object at present of propounding a new system of classification, for which there is yet insufficient knowledge, but as a guide to the analysis of clinical material and the prosecution of research.

It will probably be conceded without question that what underlies mental illness is some disturbance, due either to structural lesion or to situational stress, in the central integrating mechanisms of the organism.

DISTINCTION BETWEEN ILLNESS AND PERSON WHO IS ILL

In analyzing any case of mental illness clinically, there are two groups of factors to be considered: (1) the nature and location of the illness, and (2) the personality of the person who is ill. A structural lesion of the nervous system gives rise to symptoms which depend on the location of the lesion; these are necessarily primary disorders in physiologic activity. The form and character of the adjustments that the patient will make under the conditions of the illness, however, depend on his personality—his persistent habits of adjustment.

To illustrate this statement, reference may be made to disease processes of known character; for example, in dementia paralytica it has long been accepted that the cerebral lesions give rise directly to well recognized disorders of function which depend on interruption of corticospinal cerebral pathways—the various manifestations known as dementia, aphasia, hemiplegia, and so on. Symptoms of this type are present in every case of dementia paralytica and depend for their appearance on the location of the lesions. At the same time there may or may not be present a psychosis, the meaning of which as a descriptive term will be more fully discussed later. At this point all that is necessary to indicate is that the “form” of the psychosis does not depend on the nature of the illness but is derived from the personality of the person who is ill. The “form” of psychosis, when one occurs, may be an anxious depression, a manic excitement, a schizophrenic syndrome or a paranoid state. To correlate the various physiologic disturbances revealed as dementia, for example, due to

the cerebral syphilis with the “form” of the psychosis will generally be conceded to be impossible. And yet this type of correlation is adopted in what are commonly called the “functional” psychoses—those in which at present the lesions, when they exist, have not been defined or discovered.

Reasoning by analogy, it seems permissible to conclude that in all psychoses, just as in those which accompany such structural lesions as those of dementia paralytica, cerebral arteriosclerosis or toxic delirium, the form of the psychosis, no matter what the nature of the illness, depends on the personality of the person who is ill.

The criteria to be used for a pathologic diagnosis, on the other hand, as in dementia paralytica, are the modifications in function caused by the lesion. This means that in order to diagnose the presence, nature and location of a lesion in any case of mental illness one must search for evidence of what functions are damaged or are lost and what remain intact, regardless of the particular pattern of expression usual to the patient—that is to say, whether an existing psychosis is of the manic-depressive, schizophrenic or paranoid form. If there is a structural lesion, the symptoms of altered function are essential or primary and will always be present, like the dementia in dementia paralytica; they should be particularly well defined and indicative of location in the final stages of the illness in cases in which permanent damage occurs.

THE MECHANISMS OF INTEGRATION

The central integrating mechanisms of the body are commonly grouped for convenience under two main headings: the cerebral pathways (corticospinal) concerned in symbolic representation, and those commonly described as autonomic. As regards the afferent paths of these two systems, the former come especially from the more highly discriminative organs of special sense and the latter from organs concerned in vegetative and primitive defensive reactions. Each system has its own set of efferent pathways and effector organs. There are also cerebral association pathways connecting the two in both directions. Using commonly accepted psychologic terms to describe the two systems, it is permissible to speak of the first as dealing with “intelligence” and the second with “affective” types of response.

The manifestations of damage in the central corticospinal integrative mechanisms have been comparatively well defined. Expressed briefly, they include disturbances in the reactions associated with consciousness and are evinced in the forms of illusion, dementia, disorientation and defects in action of the type of apraxia. In addition to the ordinary methods of neurologic investigation of lower level disturbances of function in this system there are available various “tests” for higher level disturbances in apperception and intelligence tests of various kinds. Such tests are continually being improved and refined and are fairly reliable, though complicated in interpretation by such problems as attention and distraction. They reveal evidences of dysfunction in most cases of recognized disease processes within the corticospinal system, and one does not hesitate clinically to postulate from the symptoms observed the presence of lesions and their location even when one does not know their nature.

Numerous researches with these methods of “testing” have been carried out in cases of “functional” psychoses. While there are some not fully explained exceptions, it seems justifiable to assert that almost always they have yielded negative results. Hence it may be concluded

that damage in the corticospinal system is at least not a principal feature of these forms of illness.

The foregoing statement applies not only to the manic-depressive psychoses but also to those of schizophrenic or paranoid type. Kraepelin,¹ who adhered rigidly to facts of observation, stated that dementia praecox is "a peculiar disturbance of the inner coherence of the psychic personality with outstanding damage in the realm of mood and in volition." Furthermore, in describing the terminal states of deterioration which frequently occur, he said ". . . the clinical picture is dominated sometimes more by poverty of ideas, sometimes more by emotional dullness and sometimes more by some one of the peculiar disturbances of volition." These statements both express the conclusion that there is essentially a disturbance in energy and the affective life. A similar description could be given of the terminal state in other psychoses; for example, in the deterioration observed after presenile psychoses (spätkatatonie) and after frontal lobectomy. These considerations at once suggest that the essential structural damage in the "functional" psychoses, including dementia praecox, when present, lies not in the "intelligence" or corticospinal regions of the brain but in the central autonomic or "affective" integrating machinery. Study of the life histories of many, but by no means all, patients with dementia praecox and of the manifestations of the illness, especially in its terminal stages, points in the same direction. Most of the research in dementia praecox today is directed toward the study of autonomic functions. This feature has been emphasized by many investigators, and yet there seems to be an unwillingness to carry the observations to a logical conclusion. So much attention has been focused on the "schizophrenia" (a term which I understand as meaning the form of the psychosis) that the significance of the "dementia praecox" (a term that may well be used to express a pathologic lesion) is overlooked.

It should be stressed that the point of view here outlined does not apply alone to schizophrenia, even though I have used illness manifesting itself in this form for purposes of illustration. One reason for making this selection is that the schizophrenic form of psychosis presents such striking evidences of distortion of thinking and action that one is almost inevitably led to postulate change in the central corticospinal neurons. It is my principal contention that it is the fact of psychosis alone that is determined by the pathologic lesion, and that the form or content of the psychosis is determined by the personality of the patient. It is not without significance that in the discussion of cases there is frequently a diversity of opinion as to whether a psychosis is of manic-depressive or of schizophrenic form; combinations of these two forms, often with more or less admixture of paranoid features, are so common as to be almost the rule. It may be suggested that a similar difficulty is experienced in attempting to classify people by personality as syntonie or cyclothymic, on the one hand, and schizoid on the other. It is always a problem not of all or none but of more or less. If I am correct in stating that one form of lesion may give rise to a schizophrenic psychosis in one person and to a manic-depressive psychosis in another, such differentiations have little importance medically. This is not intended to imply that study of the form

of psychosis should be neglected. Indeed, a psychosis, outcome of an experiment of nature, presents the facts of modes of adjustment in such exaggerated form that it furnishes extremely valuable information for use in the study of personality and the psychoneuroses.

The foregoing considerations lead me to the conclusion that the presence of a psychosis always indicates disturbance in central autonomic integration, no matter what the pathologic nature of the cause. It may be unnecessary but seems wise to emphasize that the corticospinal and the autonomic systems may both be damaged by some lesions. When this occurs, as in dementia paralytica, for example, there will be symptoms belonging to disturbed functions in both systems.

PSYCHOSIS AND PSYCHONEUROSIS

While it has little bearing on the thesis of this article, it seems advisable to comment on the current use of the terms psychosis and psychoneurosis. I know of no satisfactory definition of or means of distinction between these two terms, and one encounters even such statements as that psychoneuroses are "minor psychoses." This lack of clarity in the use of these terms is an unquestionable source of confusion. In order to overcome this difficulty, I propose to define these two terms as follows: A psychosis is a pathologic state of mind brought about by structural lesion of the central autonomic nervous system; a psychoneurosis, on the other hand, is a disturbance in adjustment to the problems of life, no matter how severe. The former arises from causes within the organism of a structural nature; the latter arises primarily from extra-organismal or interorganismal relations, and the liability to its occurrence is dependent on the constitutional endowment of the patient at the time.

It is not my intention to make an issue of this question of defining terms, but I submit that the meaning here offered has a practical bearing on the understanding of mental illnesses and the selection of the appropriate therapeutic approach. Used in this manner, the term psychosis is not a substitute for the legal term insanity (a sense in which it is often used) but implies the presence of an organic lesion even if the nature of the lesion is not known. Furthermore, a psychoneurosis may be so severe that the patient is committably "insane."

From these considerations it is evident that a new grouping of mental illnesses must be undertaken. With the psychoneuroses would be included the conventionally accepted reactive depressions and elations, and cases of what today are called schizophrenia but which are essentially reactive conditions of psychogenic nature.

AUTONOMIC INTEGRATION AS CONSTITUTIONAL ENDOWMENT

In the evaluation of constitutional endowment, too little consideration has been given to the problem of energy endowment. The energy of the organism undoubtedly arises ultimately from the metabolic activity of the individual cells of which the organism is constructed. Regulation of the metabolic activity, and hence of the quantitative output and direction of flow of energy, is a function of the autonomic system, in which are included the endocrine glands, and this is integrated through the central autonomic nervous system.

While satisfactory means for the accurate measurement of energy capacity are not available, it is possible to estimate this factor by a study of the life history of the patient through forcefulness of active adjustment

1. Kraepelin, Emil: *Psychiatrie*, Leipzig, Johann Ambrosius Barth, 1913, vol. 3, p. 668: ". . . eine eigenartige Zerstörung des inneren Zusammenhanges des psychischen Persönlichkeits mit vorwiegender Schädigung des Gemütslebens und des Willens." P. 880: ". . . in denen bald mehr die Verstandesschwäche, bald mehr die Gemütsstumpfheit, bald mehr eine der eigenthümlichen Willensstörungen das Zustandbild beherrscht."

or a tendency to retire into wishful thinking, the reactions of the body to toxins and infections and the types of associates and of vocation and avocation, for example. The energy of the organism does not correlate with intelligence. Energy may be severely defective in a person with superior intelligence quotient; the reverse is also observed. Doubtless in this, as in other bodily functions, there is a range of what may be considered normal energy (in the sense that the energy is sufficient to allow adjustment to average life difficulties). Even with average energy endowment, however, greater thwarting from particularly difficult situations may still give rise to poor adjustments, or psychoneuroses.

PATHOGENIC POSSIBILITIES

1. *Organic (Psychosis).*—Like other organs and systems of organs, the nervous system is liable to such lesions as toxic and infectious damage, trauma, neoplasms, degenerations due to defective blood supply, senility, dietary deficiency and other causes. When

The Nature of Disturbance in the Central Autonomic Nervous System in Relation to the Conventional Classification of Mental Illness, Mainly on the Basis of the Personality of the Patient

The Illness	Some Conventional Designations
Primary defect conditions..	Dementia simplex type of schizophrenia; psychopathic personality; some neurasthenias
Toxic and infectious lesions	Delirious psychoses; acute hallucinosis; manic-depressive, schizophrenic and paranoid psychoses and emotional deterioration following epidemic encephalitis, or associated with pellagra, dementia paralytica, and the like
Traumatic lesions.....	Psychoses associated with trauma of the head; the traumatic constitution
Degenerative lesions.....	Psychoses and affective defects with involutional melancholia and other presenile conditions, with senility, with arteriosclerosis, and so on
Lesions of unknown nature	Many schizophrenias, particularly those of catatonic form; some manic-depressive and paranoid conditions
Disorders in homeostasis...	Constitutional types of manic-depressive psychosis and some schizophrenias of cyclic form
Situational reactions (without structural lesion)	Most psychoneuroses; some manic-depressive, schizophrenic and paranoid psychoses

such lesions involve the central autonomic nervous system a psychosis—characterized by increase or diminution in the output of energy—will occur.

A particular group of psychoses, sometimes of manic-depressive, sometimes of schizophrenic, form appears to be associated with defective organization of the integration of what Cannon has called homeostasis. Since these are periodic in their appearance it seems at least probable that there are precipitating factors of unknown but possibly sometimes of organic nature which do not give rise to irreversible changes in the nervous system.

2. *Primary Defects.*—Ageneses and defects caused by lesions occurring early in life are well known in the cerebral corticospinal system and are known clinically as mental deficiency. It is postulated that similar defects occur in the central autonomic nervous system. These are expressed in the form of defective energy of reaction, low levels of metabolic activity, and so on, and have already been discussed under the heading of constitutional endowment.

3. *Reactive (Psychoneurosis).*—As already indicated, these are adjustments of the organism to situations of difficulty and thwarting. However, as an essential part of the causation there is a relative weakness of autonomic construction, relative in the sense of a relation between the energy available and the severity of the difficulty giving rise to the adjustment.

While psychoses and psychoneuroses are thus defined as presenting essential points of difference, it must not be inferred that they are mutually exclusive. Combinations of the two types of factor are common in clinical experience, and careful analysis may be needed to evaluate the importance of each and thus to determine the proper therapeutic approach.

The accompanying table will indicate, in a general way, the regrouping of cases that emerges from the foregoing considerations. Damage in the corticospinal integrative mechanisms has been omitted from the table for the reason that the symptoms produced are commonly recognized and adequately evaluated. It should be stressed, however, that one and the same disease process may affect the two integrating systems, as in dementia paralytica, toxic delirium or cerebral arteriosclerosis. A psychosis may thus be accompanied by evidences of disturbance of intelligence.

From the table it is evident that, when analyzed in this way, it has seemed possible to make some tentative subdivisions of the pathologically heterogeneous groups of the so-called functional psychoses. In illustration, the case histories in two examples of what were conventionally classified as schizophrenia are outlined and the differential points emphasized. One is a psychosis, the other a psychoneurosis as here defined.

CASE 1.—Conventionally classified as schizophrenia with some catatonic features. *Principal symptoms, disturbances of mood with progressive deterioration of interest and activity in a person with good intelligence and low average energy endowment. Diagnosis: structural lesion, nature unknown, in the central autonomic nervous system; schizophrenic psychosis.*

Prepsychotic History.—The family history was without especial taint, except that an older brother died of tuberculosis at the age of 25. The family was an unusually closely knit unit, apparently content to make few external associations. The early history of the patient is remarkable for lack of color in the personality. She was always healthy and had no serious illness. She was obedient and did not get into mischief, never requiring discipline; she was retiring and made few friends, prudish in dress and habits, did not smoke, drink or use cosmetics, and yet was not unusually religious. She was bashful with men and had no love affairs. She was thoughtful of others and meticulous in her work. After leaving school at the age of 17 she secured a position as a stenographer and remained with this firm for thirteen and one-half years until the time of the breakdown; she was promoted to the post of secretary to an executive officer, her maximum earnings being \$125 a month; she voluntarily gave her earnings to the mother.

The lack of forcefulness and expression of inner drives suggest that endowment with energy was somewhat below average, but adequate for the situation in which she lived and sufficient to enable her to pass through the period of adolescence without evident difficulty. The absence of severe illness indicates an adequate bodily defensive endowment.

Endowment with intelligence was certainly average and probably higher. She graduated from grammar school at the age of 12 years 2 months, having received double promotion from grade 6B to grade 7B. In high school she was considered one of the bright students of her year. Her only extracurricular activity in high school was working on the school paper; she had some stories printed. She always returned home promptly from school and worked in the family store. An intelligence test (Stanford-Binet) at the age of 31, three or four years after the onset of the illness, gave an intelligence quotient of 102, and the comment was made that this was probably at least 10 points too low.

Precipitating Factors.—Careful inquiry failed to reveal any change in the situation at home, at work or in the personal affairs of the patient.

The Psychosis.—The onset was insidious and the progress slow. Three years elapsed after the first changes were noticed before it was realized that there was something seriously wrong and the patient was sent home from the office. The early manifestations, at the age of about 28, were signs of irritability.

fatigue and increasing withdrawal from people. These were at first occasional and fleeting but slowly became more frequent and persistent. There also appeared evidences of a feeling of change and a depressed mood, with self blame. For example, she spoke of noticing a change in a younger brother, who had been probably her closest friend, and said that the change was due to poisoning because she had sterilized some instruments in an antiseptic solution when the brother had diphtheria three years before. She began to speak of being observed by people, particularly colored people, on the streets, that her home was under surveillance and her father wanted by government men. At the office she became argumentative, even at times impertinent. Sudden impulsive actions, without apparent motive, were observed both at home and at work. For example, she would suddenly leave the room, walking hurriedly, and be found rocking furiously in a chair or staring through a window, seemingly perplexed and oblivious of her surroundings; on one occasion, three years after the onset, she jumped out of bed in the middle of the night and started to play the piano. When questioned about this episode she said that a voice had ordered her to play and sing; other evidences of hallucinosis were not observed at any time. With these erratic and somewhat explosive disturbances of mood, which became gradually more prominent, there appeared evidences of loss of interest; she became careless of appearances and, though she had been a prude, would wander around the house nude.

The patient was under observation at the Psychiatric Institute for about fifteen months, when her age was 31 and 32. During this period she was most of the time inactive and indifferent, but there were occasional spontaneous spurts of increased activity, in some of which she was even playful and interfered with other patients. Most often she resisted in routine activities, such as eating, bathing and dressing. The resistance was often negativistic; for example, she might do no work in the occupational department but begin to work rapidly when the call to discontinue was made; when asked to do something she might not comply but suddenly perform the task if someone else was asked to do it. At times she assumed awkward postures, such as standing on one foot with the other raised, and maintained this posture for as long as ten minutes. Occasionally she was violent; she threw dishes at a patient who took some bread from her tray. Her voice was most often so low as to be almost a whisper; at other times it was almost a yell. She was negligent and careless in dress and attention to excreta.

Mental content as revealed in what she said and did appeared to be as colorless as the story of her prepsychotic life. She was formally well oriented at all times and the comment was made that her speech utterances were grammatically correct. Memory, as far as could be investigated, was good; she spoke of incidents in another hospital, recalling the names of nurses and physicians. Frequently there were expressions of a feeling of change and domination, with depressive content. She said, for example: "I feel a goner; I don't want to ruin any of your lives; I don't want to hurt any one; there is a change in me; I have no respect, no love; do you think I am dead? Death is coming; I am afraid of death." "I want to come but something keeps me from coming; I can't help it; I want to eat, I'm not really stubborn, but I just feel that something holds me, I can't help it."

Following a period of *dauerschlaf* from administration of sodium amytal there was a brief period of improvement. The patient became more active and responsive. She said spontaneously that she felt better and asked for the physician by name, saying that she wished to go home. "I feel well enough to go." She assisted the nurse with some ward work and said "May I wash those cups for you? They are greasy and you will get it all over your hands, and it will give me something to do."

Physical examination revealed little of significance. There was severe acne of the face. A roentgenogram of the chest was normal in appearance, in contrast with the fact that about two years later a film made at the Chicago State Hospital presented definite evidence of tuberculosis. Laboratory studies yielded results that were all within normal range. The blood pressure was 124 systolic and 88 diastolic; the basal metabolic rate was +1 and -16, respectively, on two occasions. Studies of the blood pressure and electrical resistance of the skin under various forms of stimulation revealed changes which will not be discussed at this time.

On a number of occasions there were observed some peculiar attacks lasting approximately ten or fifteen minutes. The attack would begin with rapid deep breathing, the eyes being closed, and after a short time would seem to reach a climax with a deep breath, when she moaned and slipped gently to the floor or back in a chair; she then appeared stuporous and limp but was not unconscious. There were no convulsive movements, but a tremor was observed in the entire body and the skin was bathed in perspiration.

On leaving the Psychiatric Institute the patient was transferred to the Chicago State Hospital, where she has been for the past year. Apathy and indifference have continued to increase. Activity is less than before, and as already mentioned there are signs of pulmonary tuberculosis.

The facts outlined seem to point, almost exclusively, in the direction of disturbance in autonomic integration. Studies of corticospinal functions reveal no evidence of damage; intelligence was fully average, with the tests used, even three or four years after the onset. In addition, the unusual occurrence of "attacks" of vegetative character has a similar significance.

The conclusion that the disturbance of autonomic integration is due to a structural lesion is based on: (1) a longitudinal review of the onset and course of the illness, early signs suggesting hyperexcitability in energy of response to situations that were apparently in no way changed, with progressively increasing signs of loss of energy (affective deterioration); (2) the absence of a relation of manifest ideational content with any consistent drive and its thwarting; (3) evidences of withdrawal from reality without indications of corresponding absorption in fantasy.

This case seems to present the evidences of vegetative disturbance in almost pure form; that is, uncomplicated by expressions of symbolic representation which would be expected in a person with more colorful personality and imagination. The case was selected for that reason; evidences of a richer fantasy life add a complicating factor which often renders differential analysis difficult.

Possibly it will be objected that this case is so evidently an example of structural lesion that the consideration of schizophrenia is unjustified. The case, however, is not unusual and it will be found on analysis that examples of this type are numerous. It may be added that this patient had been studied in three different hospitals before coming to the Psychiatric Institute and that in all the case was considered to be one of schizophrenia of catatonic type.

CASE 2.—Conventional classification, schizophrenia of hebephrenic type. Abrupt onset of adjustment by fantasy with striking symbolic expression in a girl, with good endowment but severely tainted heredity and extremely difficult home situation, following a love affair. Recovery without defect in about two years. Second breakdown after another love affair one year later. Diagnosis: Psychoneurosis.

Personal History.—The paternal family history is replete with examples of erratic behavior, mental illness and criminality, combined with high intelligence. The father was a drunkard and committed many sexual crimes. The mother, a talented musician, divorced the father and assumed a different name when the patient was about 10 and has since become the mistress of a man whom the patient calls uncle. The patient was healthy and had no serious illness; she is strikingly beautiful and has resented scars left by instruments used in her delivery and also myopia, which has necessitated wearing glasses since the age of 10. Menstruation started at the age of 13 and was accompanied by moodiness and a tendency to solitude; periods of depression and irritability have been frequent during the week preceding menstruation. At school the patient was always first in her class; she graduated from grammar school at 13 and from high school at 17. She was always anxious to succeed;

took everything seriously and worried greatly over examinations and other situations of responsibility.

As a child she had little association with other children. It is reported that she was devotedly attached to her father but after the separation of the parents, which was accompanied by a good deal of unpleasant notoriety, never spoke of him. Living alone with her mother after this, she was still more isolated; she was somewhat precocious and found it difficult to adjust to children of her age. The first year in a private high school, at the onset of puberty, was very unhappy; she made no friends and took no part in social affairs. She refused to return to this school and was sent to another private school for girls in her second year. There the picture changed completely; she became a leader, was extremely popular and active, and was thoroughly happy. She showed considerable talent in singing and dramatics. In the last year, at the age of 17, she had a mild love affair, which lasted three months, but she behaved quietly and sedately and showed no particular upset when it was broken off.

After graduating she held several clerical jobs for a short time but resented the monotony and spoke of a desire "to be somebody." She "had to be a lady" and "hated mediocrity." She sang over the radio, without pay, for three months but was dropped because she refused to change her style to suit the sponsor. During this period she maintained an active social life, entertaining friends and showing a good deal of independence. She also studied music and dancing. She wrote poetry with some evidence of ability but did not attempt to publish it. At times she expressed ideas of jealousy toward her mother and resented the mother's selection of her (the patient's) clothes; she commented on the mother's attractiveness and accused her of stealing her "beaux."

Precipitating Factors.—At the age of 19 she became infatuated with a music teacher, aged 35, who is said to have talked to her about sexuality and to have discussed homosexuality. She told her mother that she "worshiped this man" and when the mother told her to "keep her feet on the ground" the patient immediately became reticent and would say no more. The teacher had been giving the patient instruction on producing her voice "from the solar plexus."

The Illness.—The onset was abrupt, shortly after the incidents just mentioned. She began to speak in a deep voice and said it was necessary "to talk from the solar plexus" and "to try to use the solar plexus" in order to be clear. On the following day she was unusually quiet and careless of her dress; she went out and stayed away all day and would give no account of where she had been. The next day she refused to eat, did not speak and lay about carelessly. On the next day she lay around in her room nude, assuming a crucified posture for hours; she took out the window screens and opened the windows wide, saying, "You must not shut out God or God's air." She screamed "hysterically" when the mother attempted to expostulate with her. On the following day similar behavior continued; she hung her head out of the window in the rain and spoke of the need to have "God's rain" on her head to cleanse her; she accused the mother: "You condemned me." She was then admitted to the Psychiatric Institute.

When received, she appeared confused and showed evidence of dehydration and intoxication. These symptoms rapidly disappeared under forced feeding and she became active and restless, showing behavior that was unpredictable. Her manner was stilted and affected; sometimes she entered into games and occupational activities; sometimes she was irritable but never violent. Eating was capricious; often she ate in large mouthfuls, licking the dishes with her tongue, mixing the various foods and even stealing from others. She was coquettish, theatrical and flirtatious, often exposing herself in front of men, and professed to fall in love with the physician who had charge of her. She was often brazenly untidy, urinating and defecating on the floor and laughing loudly while doing so. Saliva was allowed to drool over her clothing. In spite of this behavior she was clearly oriented and fully in contact when she responded to questions, and sometimes expressed the thought "I want to be a lady."

Following a course of dauerschlaf with sodium amylal the patient became more communicative. She spoke of intense jealousy of her mother and said: "I took sick to bring her to her senses." "She persuaded me against men." "The air

around me was rotten. I had to breathe deeply to catch air in order to live in purity." "I broke down to clear my mother of her sins." "She always wanted me to have older men as friends and never of my own age. After a second course of dauerschlaf even more frank confessions of resentment toward the home situation were given. She commented on the immoral lives of both her father and her mother.

Subsequently she remained well in contact and the odd behavior rapidly subsided. She was allowed to return home at the end of two months. She remained well for two or three weeks; then there reappeared many mannerisms; she refused food and again became untidy and soiling in habits. She was then sent to a private sanatorium, where behavior similar to that already described continued for nearly a year. Much of the time she spoke only in broken English with a French accent—a symbol for her fantasies, as she later acknowledged. She also retained urine and feces—sometimes necessitating catheterization—and said that the excreta "belonged to her"; she defecated on paper and carried the excrement about, refusing to surrender it. In some of the remarks she accused her mother of homosexuality and bestiality. At other times she expressed a maternally protective attitude toward the mother. Improvement occurred gradually, with resumption of interest in sports and dancing. The patient appeared to gain full insight into the significance of the symbols she had used in her fantasies.

Subsequent History.—Arrangements were made for the mother and daughter to leave their home and to live separately in another state. Frank discussions were held with both, and there was a decided improvement in their attitude toward each other. The patient made excellent adjustment socially and secured work in which she was interested. Letters were received from both, recording increased happiness and satisfaction. This situation continued for more than a year, when another love affair disturbed the patient's balance. Unfortunately, she received advice from a physician which she interpreted as implying that her troubles would be cured by sexual intercourse. This advice was followed and resulted in another breakdown, from all accounts similar to the previous episode and without indications of deterioration of interest. This condition still exists at the time of the present report.

The report is much condensed and intended to show only the nature of the illness in broad outline. The facts given are sufficient to indicate the conflicts in which the patient lived—conflicts arising from ideals which had been painfully reinforced by the social attitude toward her family and by the teaching of the mother; strong sexual drives, stimulated by observations of the parents and particularly of the mother, and personal experiences in a somewhat bohemian atmosphere. The form of the illness exquisitely symbolizes the existing conflicts, and the outbreak, in both attacks, was precipitated by a situation of emotional stress. Throughout, except for the brief period of dehydration at the outset, the patient has remained clear and in contact with reality; there have been no evidences of corticospinal defect and no suggestions at any time of loss of energy. Even the untidiness with regard to soiling is evidently an active process of fantasy and adjustment and is not suggestive of defect in energy.

SUMMARY AND CONCLUSIONS

The term psychosis may profitably be used to designate active disorder in behavior resulting from structural damage of the central machinery of autonomic integration, specifically dynamic or "energy" disorders.

The term psychoneurosis may, in contrast, be used to designate maladjustments (psychogenic) to life situations and when used in this sense will include some examples of what today are grouped as psychoses; the behavior constituting a psychoneurotic adjustment may require commitment of the patient.

Examples of structural damage or defect, either congenital or acquired, in the central autonomic nervous

system include, as examples, schizophrenic dementia simplex, psychopathic personality, some forms of "neurasthenia," the "organic" psychoses, involutional melancholia, many manifestations of chronic encephalitis, and affective changes following frontal lobectomy. In addition, there belong in this group many of the so-called functional psychoses, whether manic-depressive, schizophrenic or paranoid in form, even though the nature of the lesion is unknown.

There is an essential difference between the symptoms produced by the illness, which includes the fact of psychosis, and those which express the form of the psychosis. The former are determined by the nature and location of structural damage and the latter by the personality of the person who is ill. Thus, one and the same organic lesion, even though its nature may be unknown, may give rise to a manic-depressive form of psychosis in one person and to a schizophrenic or paranoid psychosis in another.

The use of the form of psychosis as a basis of correlation with observed physiologic disturbances will yield little of value as regards the pathologic condition concerned in giving rise to the fact of psychosis. The form of the psychosis is of paramount value in the study of personality.

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SEVERE REACTIONS FOLLOWING TRANSFUSION IN HEMO- LYTIC JAUNDICE

REPORT OF TWO CASES

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AND

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OMAHA

During a recent study of a group of patients with hemolytic jaundice before, during and after splenectomy, we¹ have been disturbed on two occasions because of unfavorable reactions following transfusion of whole blood. A general review of the voluminous literature on hemolytic jaundice failed to reveal a single title referable to this complication, but submerged in the detailed study of case reports there are warnings of its occurrence and possibility. As a result of our experience, it seemed feasible to focus attention on the subject and to present the clinical manifestations and the possible cause.

REPORT OF CASES

Miss M. B., a housemaid, aged 25, entered the University Hospital for the third time Nov. 30, 1936, with symptoms of a severe crisis of hemolytic jaundice. On the two previous hospital admissions, four years before, she had been in similar crises with a red blood cell count of about one million. Symptoms of increasing weakness, yellowish pallor and bouts of diarrhea had been present for two months.

On physical examination the patient was extremely pale and moderately jaundiced. The temperature was 101.6 F., the pulse rate 120, the blood pressure 108 systolic and 62 diastolic. There were no purpuric manifestations on the skin, and the sticking test was negative. There was no glossitis or papillary atrophy of the tongue. Generalized lymphadenopathy was absent. There were no pulmonary abnormalities, and except for a soft systolic murmur at the apex, hemic in origin, the

heart was normal. The liver edge was just palpable; the spleen was enlarged 4 cm. below the left costal margin. The neurologic examination was negative.

At the time of admission the hemoglobin content was 20 per cent (2.9 Gm.), the erythrocyte count 990,000 and the leukocyte count 4,000. Except for a shift to the left of the polymorphonuclear series, the differential count was normal. A study of the blood smear showed extreme variation in the size and shape of the red cells with numerous polychromatophilic cells, Cabot rings and Howell-Jolly bodies. The mean corpuscular volume of the erythrocytes was 103 cubic microns; the mean corpuscular hemoglobin content was 36 micrograms. The bleeding, clotting and clot retraction times were normal, the platelets slightly reduced. The reticulocytes were 5.5 per cent. The fragility test of the red cells showed beginning hemolysis at 0.46 per cent and complete hemolysis at 0.28 per cent. The icterus index was 27 units, the van den Bergh reaction indirect, quantitatively 2 mg. per liter. There was complete absence of free hydrochloric acid in the gastric contents, and examination of the stool was negative for blood. The urine was normal and the Wassermann reaction of the blood was negative. A biopsy of the bone marrow showed marked hyperplasia of the erythropoietic tissue.

The patient was critically ill. Emergency splenectomy was considered, but transfusions were elected in view of the extremely low blood counts and the poor operative risk. A transfusion of 450 cc. of whole blood by the indirect citrate method was given on each of two successive days. Though there was no immediate febrile reaction following transfusion, a few hours after the second one the patient complained of severe abdominal pain. The jaundice became more intense and the spleen became tender and increased in size. The temperature gradually rose to 105.4 F. During the next twenty-four hours the erythrocyte count dropped from 1,700,000 to 1,360,000 and the hemoglobin content from 36 per cent to 25 per cent (chart 1). The donor-

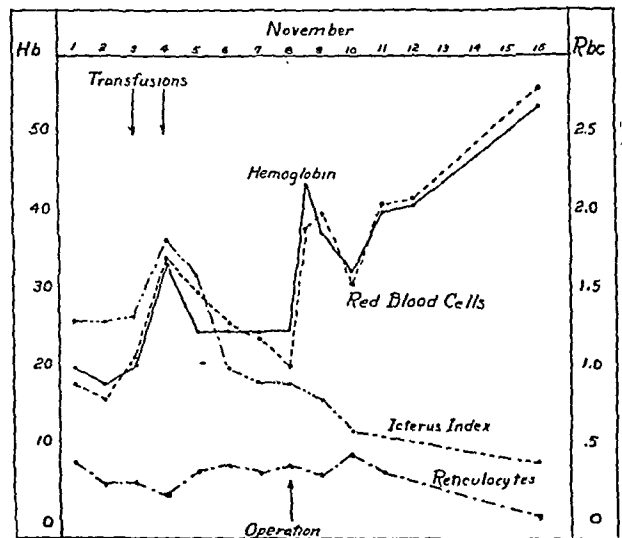


Chart 1.—Course in case 1.

recipient bloods were rematched and found to be compatible. The patient was watched carefully for signs of renal damage, but no anuria, hematuria or hemoglobinuria developed. Four days later splenectomy was performed under gas-ether anesthesia with prompt improvement in the blood and progressive decrease of the jaundice. Two months later the gallbladder was removed because of cholelithiasis. The patient was discharged from the hospital in a greatly improved state, both clinically and hematologically.

E. M., a white man aged 61, a laborer, entered the University Hospital for the first time May 7, 1937, complaining of intermittent weakness since 1932. For several months during each of the past five years he had been forced to stop work because of fatigue. About eight months before admission to the hospital

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1. Sharpe, J. C.: Hemolytic Jaundice. *Internat. Clin.* 2: 146-167 (June) 1937.

a diagnosis of pernicious anemia had been made elsewhere and oral and intramuscular liver extract had been administered. Though considerable improvement was first noted, a severe relapse soon occurred while he was still under intensive liver therapy. Symptoms of marked weakness, dyspnea and palpitation on exertion, dizziness and a lemon-yellow pallor had all been slowly progressive in spite of all types of antianemic therapy. He stated that he had had no symptoms of sore tongue, paresthesia or gastrointestinal complaint. The past and family histories were noncontributory except to note that a brother had been jaundiced for some time at the age of 20 years.

On physical examination the patient appeared well nourished. The temperature and pulse and respiration rates were normal. There was a definite icteric tinge of the skin and sclera, and the mucous membranes were pale. The eyes, ears, nose and throat were not abnormal, except for the retinal examination, made by Dr. Harold Gifford, which showed many scattered hemorrhages. There was no evidence of redness of the tongue or papillary atrophy. There were a few pea-sized cervical lymph nodes but lymphadenopathy was not generalized. The lungs were clear and the heart was not remarkable in rhythm or sounds. There was a two plus sclerosis of the radial vessels, and the blood pressure was 112 systolic and 72 diastolic. The spleen was enlarged to 7.5 cm. below the left costal margin and

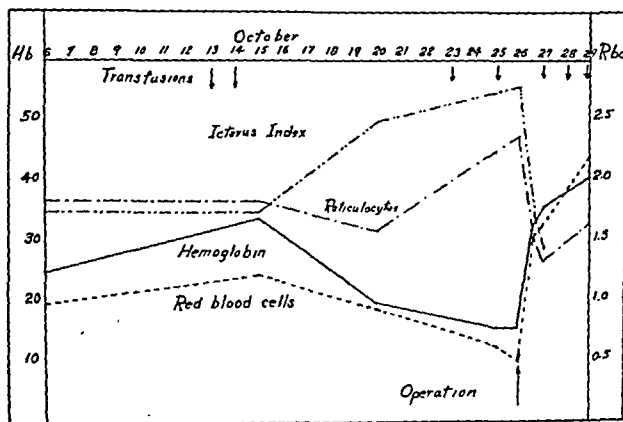


Chart 2.—Course in case 2.

was smooth and firm. There were no areas of abdominal tenderness and no abnormal masses palpable. The neurologic examination was negative.

A blood count disclosed a hemoglobin content of 57 per cent (8.2 Gm.), erythrocytes 2,860,000, and leukocytes 3,200 with 30 per cent of the segmented polymorphonuclear type, 31 per cent staff form, 26 per cent lymphocytes, 6 per cent monocytes and 1 per cent eosinophils. The smear of the red blood cells showed marked achromia with anisocytosis and poikilocytosis with a shift toward the macrocytic side, polychromatophilia and nucleated red cells (5 per hundred white cells). No spherocytes were noted. The mean corpuscular volume was 124 cubic microns, the mean corpuscular hemoglobin 32.4 micromicrograms, and the mean corpuscular hemoglobin concentration 28 per cent. The reticulocytes varied from 10.3 per cent to 14.3 per cent. The fragility of the red cells to hypotonic salt solution showed beginning hemolysis at 0.42 per cent and complete hemolysis at 0.32 per cent. The platelets numbered 230,000. The bleeding and clotting times were normal with firm and rapid retraction of the clot. The urinalysis was negative as well as the Wassermann reaction of the blood. The gastric content showed 13 degrees free acid and 27 degrees total acid; examination of the stool was negative for blood. The basal metabolic rate was minus 8 per cent. The blood non-protein nitrogen was 35 mg. per hundred cubic centimeters. The van den Bergh test showed a direct, delayed, slight positive reaction, quantitative 17 mg. per liter. The bromsulphalein liver function test showed 50 per cent retention in five minutes and 10 per cent in thirty minutes. A biopsy of the bone marrow taken from the sternum revealed marked hyperplasia of the erythropoietic tissue.

Splenectomy was advised but the patient refused, and he was dismissed from the hospital with instructions to take weekly intramuscular liver extract and daily doses of reduced iron.

The patient returned to the hospital October 6 with a history of feeling moderately well until six weeks before admission, at which time he first noted vague pain in the upper part of the abdomen associated with frequent attacks of vomiting, increased pallor, deeper jaundice and progressive weakness. The stools were not clay colored and the pain was not colicky at any time. He requested splenectomy at this time.

The physical examination was essentially the same as on his previous admission. The jaundice was definitely more marked and the spleen slightly larger, extending 9 cm. below the left costal margin.

The blood count revealed a hemoglobin content of 25 per cent (4.2 Gm.), erythrocytes 1,000,000, and leukocytes 1,400 with the same differential formula. The fragility of the red cells remained normal, but the reticulocytes had increased to 37.5 per cent and the quantitative van den Bergh reaction was up to 68 mg. per liter. The icterus index was 35 units. The remaining blood studies were essentially the same as on his previous examination. Roentgenograms of the gallbladder failed to show any concentration of the dye, and no opaque calculi were discerned. A study of the gastrointestinal tract showed no abnormality.

In an attempt to build up the patient's general physical condition before operation, intravenous dextrose was administered frequently. In addition, transfusions of 500 cc. of whole blood, by the indirect citrate method, were given on two successive days. The hemoglobin increased to 34 per cent and the red cells to 1,250,000 with 2,600 white cells. Unavoidable circumstances prevented operation being performed at this time. The second day after the second transfusion the patient complained of a recurrence of the vague abdominal pain, which rapidly increased in severity. The jaundice became deeper, the spleen tender to palpation. What first appeared to be a biliary attack was really an acute hemolytic crisis in which the blood slowly decreased to a level of 20 per cent hemoglobin, 980,000 red cells and 2,250 white cells (chart 2). The reticulocytes were 39 per cent; the icterus index increased to 50 units. The stool was highly colored at all times and the van den Bergh reaction remained indirectly positive. Transfusions were resorted to again and two injections of 500 cc. were given on alternate days with no apparent reaction. Though the general condition improved somewhat, the blood count decreased to 16 per cent hemoglobin, the erythrocyte count to 510,000 and the leukocyte count to 2,000, so that emergency splenectomy was performed October 27. The subsequent postoperative course with complications of thrombosis of the splenic and hepatic veins and death has been the subject of another paper.²

COMMENT

When one considers the hundreds of patients with hemolytic jaundice and the number who have been subjected to transfusion either during the bouts of severe anemia accompanying a hemoclastic crisis or in the preparation for splenectomy, the incidence of unfavorable reactions must not be very great. Transfusions as a temporary measure in the acute episodes of destruction of the blood and as a routine preoperative procedure have long been advocated by many authorities.³ Certainly transfusion is of distinct value in patients jaundiced as a result of biliary and hepatic disease.⁴ In addition, transfusion is strongly recommended for the

2. Davis, H. H., and Sharpe, J. C.: Fatal Thrombosis of Splenic and Portal Veins Following Splenectomy, to be published.

3. These include:

Titelton, W.: Hemolytic Jaundice, *Medicine* 1:355-388 (Aug.) 1922.
Cheney, W. F., and Cheney, Garnett. Chronic Hereditary Jaundice, *Am. J. M. Sc.* 187:191-212 (Feb.) 1914.
Dudley, G. S.: Familial Hemolytic Jaundice, *S. Clin. North America* 16:839-842 (June) 1930.
Scott, A. M.: Acholuric Jaundice: The Serial Onset of Acute Bilious Crisis in an Entire Family, *Lancet* 2:872-874 (Oct. 19) 1935.
Hurxthal, L. M.: Hemolytic Jaundice: Consideration of the Diagnosis and Treatment, *S. Clin. North America* 15:1475-1479 (Dec.) 1935.
Bazin, A. T.: Splenectomy: Operative Procedure and After-Care, *Canad. M. A. J.* 32:482-484 (Nov.) 1935.
4. Judd, E. S.; Snell, A. M., and Werner, L. C.: Transfusion of Jaundiced Patients, *J. A. M. A.* 105:1653-1659 (Nov. 25) 1935.

acute hemolytic anemia of Lederer,⁵ although a fatal reaction has recently been reported.⁶

Lord Dawson⁷ in 1931 was the first to mention the dangerous consequences of transfusion in hemolytic jaundice. In two typical cases in which preparations were made for splenectomy, and after every care in blood typing, transfusion resulted in death. A woman aged 65 with a red blood cell count of 3,050,000 received one transfusion followed by gradually increasing jaundice and death. The second patient, a woman aged 44, received three transfusions over a period of sixteen days, each followed by pyrexia (up to 104 F.), vomiting, diarrhea and deepening jaundice. Toward the end of the course there was increased anuria, which Dawson concluded was due to the blocking of kidney tubules by masses of acid hematin pigment, as shown by Baker and Dodds.⁸ If transfusion is to be given to these patients, Dawson recommends the administration of an initial, small pilot dose of blood before the usual therapeutic amount is given. Wise⁹ in 1933 warned of reactions following transfusion but cited no personal experience. Hartfall and Stewart¹⁰ also in 1933 reported that a woman, aged 52, with typical familial hemolytic anemia and an erythrocyte count of 2,770,000, in preparation for splenectomy, received 500 cc. of type IV blood, following which jaundice increased markedly, with death occurring within twenty-four hours. The postmortem examination showed nothing of note except a massive heterotopia of bone marrow occurring in the thorax. Doan and his associates¹¹ in 1934 again warned that, the more severe the anemia in hemolytic jaundice, the greater the danger of transfusion. They concluded that transfusion was contraindicated as well as unnecessary. Lawrence¹² in 1937 cited the case of a woman aged 50 who before splenectomy reacted moderately after each of three transfusions. Except for a rise in temperature, Lawrence did not give the details of the reaction.

In both of our cases two transfusions were given on two successive days. Both patients were in a state of acute hemoclastic crisis, with the number of erythrocytes about one million, and both were being prepared for emergency splenectomy. Within a few hours after the second transfusion the patients complained of severe abdominal pain and backache. In case 2 the pain simulated biliary colic. Accompanying the abdominal pain there was an increase in the size and tenderness of the spleen, fever and intensification of the jaundice. In each instance the number of erythrocytes decreased to less than one million. The acute symptoms gradually subsided over a period of forty-eight hours, during which time there was no decrease in the amount of urinary output, hematuria or hemoglobinuria. Though both cases were complicated by the presence of biliary lithiasis, so common in hemolytic jaundice,¹ throughout

the attack the stools continued to show bile and the van den Berg reaction, though quantitatively increasing, remained indirectly positive. In each instance following the reaction the donor's blood was rechecked and found compatible with that of the recipient. In fact, in case 1 the same two donors were used again in transfusions following a later cholecystectomy without the appearance of the previous phenomena.

It is impossible as yet to determine definitely the underlying mechanism of these reactions. It may possibly be one factor or a combination of several factors. Doan and his associates¹¹ are of the opinion that the addition of transfused red cells from without only furnishes more material for hemolysis with consequent further pigmentary and toxic embarrassment of the liver and kidneys. On the other hand, these patients who require transfusion are usually in a severe hemolytic crisis, the cause of which is unknown. With their hemopoietic equilibrium already disturbed by the active hemolytic process, the destructive function of the spleen is further intensified by the procedure of transfusion. Apparently the erythropoietic equilibrium of construction-destruction is of such a delicate nature in hemolytic jaundice that the onset of crises may be initiated by dietary indiscretion, constipation, emotional disturbances, chilling, overexertion, acute infections, menstruation, pregnancy, high altitudes and surgical procedures. Finally, the reactions may be merely a part of that group of unexplained delayed post-transfusion reactions that Bordley¹³ in 1931 and Goldring and Graef¹⁴ in 1936 have so aptly summarized as occurring in any number of unrelated conditions. Their group of cases, however, differed somewhat in that they were characterized by the delayed onset of symptoms from one to two weeks after the transfusion and consisted of conditions ranging from drowsiness to coma and convulsions, accompanying marked renal insufficiency, and frequently led to death. At autopsy the kidneys were swollen and tubular epithelial cells contained droplets of peculiar pigmented material and showed advanced degenerative changes. In this group of delayed reactions jaundice was present in only a third of the cases and of mild grade, and there was no tendency for the hemoglobin and red blood corpuscles to decline such as was observed in our cases.

With this complication in mind, the problem naturally arises as to its prevention. A therapeutic lead that might prove of value comes from Witts,¹⁵ who except in emergencies does not permit transfusions to be given until alkalis have been administered in sufficient dosage to render the urine alkaline. This dictum is substantiated by the recent experimental work of DeGowin and his co-workers,¹⁶ who found that when the urine was alkaline the intravenous injection of a large amount of dog hemoglobin into dogs seemed to be innocuous. However, when the urine was acid, transfusion of hemoglobin sooner or later produced renal insufficiency from obstruction of the tubular lumens with masses of pigment derived from hemoglobin. Since transfusion may at times cause the appearance of more alarming symptoms, and even death in an already

5. Joulès, H., and Masterman, L. M.: Acute Hemolytic Anemia of Lederer, *Brit. M. J.* 2: 150-154 (July 27) 1935.

6. Payne, R. V.: Acute Hemolytic Anemia: Death After Transfusion, *Gus's Hosp. Rep.* 14: 65-71 (Jan.) 1934.

7. Dawson, B. E.: Hemolytic Icterus, *Brit. M. J.* 1: 921-928 (May 30), 963-966 (June 6) 1931.

8. Baker, S. L., and Dodds, E. C.: Obstruction of the Renal Tubules During the Excretion of Hemoglobin, *J. Path. & Bact.* 6: 247-260 (Oct.) 1935.

9. Wise, W. D.: Hemolytic Jaundice, *Am. J. Surg.* 20: 722-735 (June) 1933.

10. Hartfall, S. J., and Stewart, M. J.: Massive Paravertebral Heterotopia of Bone Marrow in a Case of Acholic Jaundice, *J. Path. & Bact.* 27: 455-459 (Nov.) 1933.

11. Doan, C. A.; Wiseman, R. K., and Erf, L. A.: Studies in Hemolytic Jaundice, *Ohio State M. J.* 30: 493-504 (Aug.) 1934.

12. Lawrence, J. S.: Indications for Splenectomy in Medical Practice, *Internat. Clin.* 11: 47 ser. 221-237 (June) 1937.

13. Bordley, James: Reaction Following Transfusion of Blood with Urinary Suppression and Uremia, *Arch. Int. Med.* 47: 288-315 (Feb.) 1931.

14. Goldring, William, and Graef, Irving: Nephrosis with Uremia Following Transfusion with Incompatible Blood, *Arch. Int. Med.* 58: 825-845 (Nov.) 1936.

15. Witts, L. J.: A Note on Blood Transfusion, *Lancet* 1: 1297-1299 (June 22) 1929.

16. DeGowin, E. L.; Osterhagen, H. F., and Andersch, M.: Renal Insufficiency from Blood Transfusion, *Arch. Int. Med.* 59: 432-444 (March) 1937.

critically ill patient with hemolytic jaundice, and since the usual antianemic drugs of iron and liver extract are of little or no avail,¹⁷ it seems that one is left with little to combat the episodes of acute destruction of the blood. Attention is called to the recent observations of Doan¹⁸ and others¹⁹ as to the value of splenectomy in the patient with severe anemia. Suffice it to say, we have fully corroborated their work and conclusions, the details of which will be published in the near future. From our experience, we conclude that transfusion is dangerous in the presence of severe crises; it is contraindicated preoperatively and it is rarely necessary postoperatively.

CONCLUSIONS

1. In two cases of severe crises in hemolytic jaundice, transfusions caused unfavorable and dangerous reactions.

2. Caution must be used in the administration of transfusions to such patients.

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MULTIPLE PRIMARY MALIGNANT TUMORS

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The coexistence of more than one malignant tumor in the same individual has been observed and recorded on many occasions, and in recent years renewed efforts have been made to appraise its incidence by a careful examination of the material provided by large hospitals. According to Hanlon,¹ up to 1931 only in seven instances have large series of postmortem examinations been studied for the purpose of determining the frequency, distribution and other factors relating to the occurrence of multiple primary malignant tumors. Before 1931 von Hauseman,² Puhr,³ Gade,⁴ Feilchenfeld,⁵ Redlich,⁶ Reichelman⁷ and Harbitz⁸ made contributions to the subject. Since then Hanlon, Warren and Gates,⁹ Schreiner and Wehr,¹⁰ Bugher¹¹ and, most recently Burke¹² have published excellent reports.

Hanlon was able to find only twenty-five reports in which three or more carcinomas were present in one individual. However, with more careful and complete postmortem examinations, especially in this country, more cases are steadily being reported. It is notable, as will be seen in the accompanying table, that in centers reporting the largest number of cases special attention has been paid to postmortem analyses of

tumors and specialized facilities for therapy have attracted large numbers of patients affected with malignant disease.

The criteria necessary to make a diagnosis of multiple primary malignant tumors were first formulated seventy-seven years ago by Billroth¹³ as follows:

1. Each tumor must have an independent histologic appearance.
2. The tumors must arise in different situations.
3. Each tumor must produce its own metastases.

Since then most authors have objected to the third requirement of Billroth, which has been considered as obviously too strict, and the following criteria observed by Warren and Gates have been accepted by most authors:

1. Each tumor must present a different picture of malignancy.
2. Each tumor must be distinct.
3. The probability of one metastasizing from the other must be excluded.

As the knowledge of carcinoma has increased and confidence in our ability to distinguish between primary tumors and metastases has been gained, there has been a liberalization in the requirements for making a diagnosis. In establishing the diagnosis of multiple primary carcinoma the greatest reliance has been placed on the distinct variation in the microscopic appearance of the several tumors.

Hanlon noted an extensive lapse of time between the appearance of the different new growths. He also noted from his examination of all available reports that the age incidence in this group of patients was of great interest. The average age of the patients who had three or more carcinomas was 63.6 years, while the average age of those who had two carcinomas was 58.8 years. These patients were several years older than those dying with a single malignant new growth. This statement is not in agreement with that of Warren and Gates, who concluded that multiple primary carcinoma occurs at approximately the same age as does a single lesion. However, other observers agree with Hanlon; they state that in most instances an interval of from five to twenty-three years elapsed between the development of the several tumors. Such is the experience of Hartman, who insists that he has cured by surgery several patients with primary neoplasm developing subsequent to the eradication of the first tumor in a separate and distant organ.

The distribution among the various organs corresponds closely with the percentage distribution of malignant new growth when it occurs singly.

It has been observed that the combination of malignant tumors in the genito-urinary and gastrointestinal tracts is relatively more frequent than other combinations. Carcinoma of the kidney of all types and carcinoma in various locations in the gastrointestinal tract have been recorded by Hanlon, Pietrusky,¹⁴ Orr,¹⁵ Nobiling,¹⁶ Junghanns,¹⁷ Tanberg¹⁸ and others. Most of the kidney tumors recorded in the literature, however, were small and went unrecognized but possessed definite microscopic stigmas of a malignant condition. Most were slow growing and represented a low degree of malignancy. In Hanlon's group,

17. Sharpe, J. C.: *The Hemolytic Anemias*, Nebraska State M. J. **21**: 179-181 (May) 1936.

18. Doan, C. A.; Curtis, G. M., and Wiseman, B. K.: *The Hematopoietic Equilibrium and Emergency Splenectomy*, J. A. M. A. **105**: 1567-1575 (Nov. 16) 1935.

19. Cowen, S. O.: *Treatment of Familial Acholuric Jaundice*, Brit. M. J. **1**: 690-692 (April 4) 1936. Glover, D. M., and Fargo, W. C.: *Familial Hemolytic Jaundice*, Ohio State M. J. **29**: 428-432 (July) 1933.

From the Urological Department, Michael Reese Hospital.
Read before the Chicago Urological Society, March 25, 1937.

1. Hanlon, F. R.: *Am. J. Cancer* (suppl.) **15**: 2001 (July) 1931.

2. von Hauseman: *Ztschr. f. Krebsforsch.* **1**: 183, 1904.

3. Puhr, L.: *Ztschr. f. Krebsforsch.* **24**: 38, 1926.

4. Gade, F. G.: *Norwegian Cancer Commission*, Oslo Institute, 1916.

5. Feilchenfeld, Josef: *Inaug. Diss.*, Berlin, 1904, p. 5.

6. Redlich, W.: *Ztschr. f. Krebsforsch.* **5**: 261, 1907.

7. Reichelman, cited by Neprjachin, G. G.: *Frankfurt. Ztschr. f. Path.* **34**: 562, 1926.

8. Harbitz, F.: *Beitr. z. path. Anat. u. z. allg. Path.* (Ziegler's) **62**: 503, 1916.

9. Warren, Shields, and Gates, Olive: *Am. J. Cancer* **16**: 1358 (Nov.) 1932.

10. Schreiner, B. F., and Wehr, W. H.: *Am. J. Cancer* **20**: 418 (Feb.) 1934.

11. Bugher, J. C.: *Am. J. Cancer* **21**: 809 (Aug.) 1934.

12. Burke, M.: *Am. J. Cancer* **27**: 316 (June) 1936.

13. Billroth, Theodor: *Chir. Klin.* 1879, p. 258.

14. Pietrusky, F.: *Centralbl. f. allg. Path. u. path. Anat.* **32**: 374, 1921.

15. Orr, J. W.: *J. Path. & Bact.* **33**: 283 (April) 1930.

16. Nobiling, H.: *Ztschr. f. Krebsforsch.* **10**: 286, 1911.

17. Junghanns, H.: *Ztschr. f. Krebsforsch.* **20**: 623, 1929.

18. Tanberg, A.: *Norsk. mag. f. lægevidensk.* **4**: 783, 1906.

studied at the Mayo Clinic, the distribution of multiple primary cancers was as follows: kidney nine times, colon nine, thyroid four, stomach three, ovary two, and in the following locations one each: parathyroid, mouth, prostate, anal margin, uterus, breast, larynx, ileum and nose.



Fig. 1.—Adenocarcinoma of right kidney removed in 1915. Note papillary and tubular arrangement of cells.

Concerning the appearance of multiple primary malignant new growths, there are at least three different and divergent opinions expressed by various authors.

*Centers from Which Large Number of Cases
Have Been Reported*

Author	Date	Place	Total Malignant Tumor Autopsies	Multiple Primary Malignant Tumors	Percentage of Multiple Primary Malignant Tumors
Egli: Cor.-Bl. f. schweiz. Aertzte 44: 449, 1914	1914	Basel.....	966	20	2.07
Norwegian Cancer Commission 4	1916	Christiania..	4,219	32	0.78
Harbitz 6.....	1916	Oslo.....	524	16	3.24
Pubr 2.....	1927	Budapest..	1,559	5	0.3
Hanlon 3.....	1931	Mayo Clinic..	710	18	2.5
Warren and Gates 9	1932	Cancer Com- mission Har- vard Univ.	1,078	40	3.7
Schreiner and Wehr 10	1934	Buffalo Insti- tute	11,212	307	2.7
Bugher 11.....	1934	U. of Michi- gan	983	25	2.1
Burke 12.....	1936	U. of Wis- consin	583	46	7.8

Ewing¹⁰ is of the opinion that their occurrence can be explained on the grounds of mere coincidence. Orr concurs in this opinion, while Hanlon concludes that multiple primary cancers represent incidental occurrences rather than a definite response to any law of neoplastic formation. Murray²⁰ and others believe that the presence of one malignant new growth has an inhibitory influence on the development of a second. On the other hand, Warren and Gates express the opinion that multiple primary malignancies may be explained by a predisposition or susceptibility to carcinoma in

certain persons or to the action of some factor favoring the development of a malignant condition but conclude that the nature of this predisposition is as yet unknown. This point of view coincides with that of Hartmann²¹ and others. Hurt and Broders²² concluded that the incidence of multiple malignant growths is greater than recorded and noted a positive hereditary factor in 28.6 per cent. Bugher, using the United States mortality statistics, computed the expected occurrence of multiple primary malignant growths on the basis of chance and found it to be exceeded by the actual occurrence; he says that the authors who have reported the largest series of multiple cancers have felt that these tumors occur more frequently than chance alone can explain and that their actual frequency exceeds their reported incidence.

The case here reported is of interest, I believe, not only because the patient had three separate and distinct primary cancers diagnosed clinically but also because he lived twenty-one years after nephrectomy for cancer of the kidney. During this long period, although this is not a record for this type of lesion, he showed no evidence of recurrence and at autopsy no vestige of this tumor was discovered after minute examination of all the tissues. A condensed history is as follows:

REPORT OF CASE

A man, aged 49, entered the Michael Reese Hospital in March 1915. He stated that four years before he began to pass blood in the urine. The hematuria was not accompanied by pain before, during or after micturition. There was no urinary frequency. Blood reappeared in the urine at intervals of from six to eight weeks and lasted each time from one to three weeks. About two years before his entrance to the hospital, marked gross hemorrhage appeared in the urine and at this time he first noted slight pain in the penis during the act of urination, and he began to void more frequently. During the past two years (1913-1915) besides the appearance of hematuria he suffered attacks of pain in the right lumbar region. These

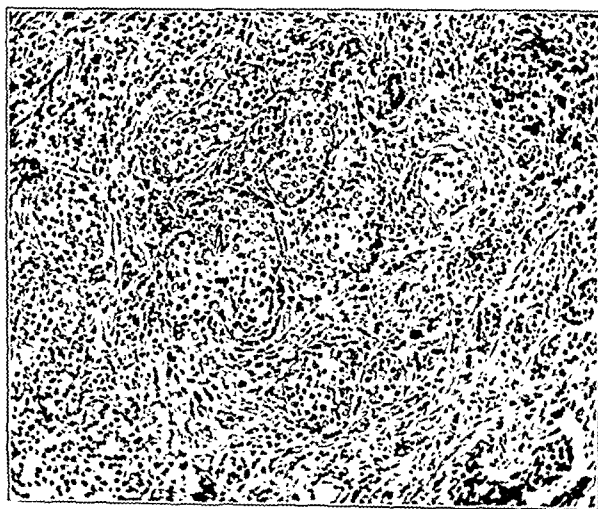


Fig. 2.—Primary carcinoma of prostate. Note large oval and polygonal cells with vesicular nuclei showing atypical mitotic figures.

were of short duration, lasting but a few minutes to twenty or thirty minutes—never longer—and would recur every four to six weeks. Blood was always seen in the urine during or after an attack. During the six months previous to admission to the hospital, the hematuria had become much worse and was more frequent.

10. Ewing, James: Neoplastic Diseases, ed. 3, Philadelphia, W. B. Saunders Company, 1928.

20. Murray, J. A.: Lancet 2:800 (Oct. 15) 1927.

21. Hartmann, H.: Bull. Acad. de méd., Paris 114:480 (Nov.) 1935.

22. Hurt, H. H., and Broders, A. C.: J. Lab. & Clin. Med. 18:765 (May) 1933.

The past history was negative except for stomach trouble seventeen years before. In the family history it was noted that his wife had had one miscarriage and that they had one living child, 14 months of age. He had had gonorrhea several times; the history of syphilis was doubtful.

Physical examination was negative except for rigidity over the right lumbar region.



Fig. 3.—Metastasis to lungs. Note characteristic large vesicular nuclei with prominent nucleoli similar to those seen in section from prostate.

Cystoscopy was negative except for slight encroachment of the prostate on the internal urethral orifice.

X-ray examination revealed a calculus in the right kidney, which was probably in a calix, and a second stone at the ureteropelvic junction.

Laboratory examinations at that time gave the following results: Repeated urinalyses showed specific gravity from 1.020 to 1.028. The reaction was consistently acid. There was constantly a 1 plus albumin reaction. Neither sugar nor acetone was found at any time. Microscopic examinations at no time showed casts, but white blood cells were always present in from five to fifteen cells per high power field to many, and the red blood cells varied from none to an occasional one.

Right nephrectomy was done in March 1915 by Dr. Kolischer. When he exposed the kidney a tumor mass was seen involving the middle third. The gross description of the kidney removed was as follows:

The kidney was slightly increased in size and measured 12 by 6 by 4 cm. It showed a cortical nodule occupying the whole of the middle third of the kidney, involving the whole thickness of the cortex and invading the pelvis. The tumor was spherical and measured 4 cm. in diameter. It was nodular and of firmer consistency than the kidney. The color was variegated from a yellowish to a bluish tinge. No secondary nodules were found. There was a small irregular stone lodged in one of the calices.

The patient again entered the hospital in 1926 for a spinal puncture, which confirmed the clinical diagnosis of tabes dorsalis, after which he remained under treatment for this condition for one year.

Ten years later, in July 1936, at the age of 70, he was sent to the hospital for urologic study, from the outpatient department. At this time he complained of frequency of urination, nocturia and dribbling, all of about three years' duration.

The history taken at this time stated that these symptoms had been of a mild nature for the preceding two or three years. He also complained of pains beginning in the lumbar region and radiating down both legs. These pains had been present for about one year. They were quite severe three weeks before admission to the hospital but were relieved by rest in bed. On entrance the temperature was 98.2 F., pulse 78 and respiratory rate 18. The blood pressure was 115 systolic, 70 diastolic. The essential physical observations were as follows: The pupils were normal (?). The cervical lymph nodes were enlarged. The chest was emphysematous and the heart tones were distant. The knee and ankle jerks were bilaterally absent.

There was an old scar on the penis. Rectal examination showed an enlarged prostate of markedly increased consistency. The outline was irregular and the surface nodular. A diagnosis of carcinoma of the prostate was made. Tabes dorsalis also was diagnosed. Metastases to the bones from cancer of the prostate were suspected, but x-ray examination failed to verify this assumption.

Other laboratory examinations were as follows: Further roentgenologic examination showed a point of obstruction in the hepatic flexure of the colon, causing delay in the passage of the barium sulfate meal. An opaque enema did not pass beyond the sigmoid. These observations were interpreted as probable carcinoma of the colon.

The Wassermann reaction of the blood was negative, while the spinal fluid yielded a positive Wassermann reaction.

The blood count showed 4,150,000 red blood cells, 75 per cent hemoglobin and 9,700 white blood cells.

Examination of the urine was negative for all pathologic elements.

Examination of the stools showed a 3 plus test for occult blood.

No urologic intervention was deemed necessary on account of the relative mildness of the urinary symptoms and because of the suspected carcinoma of the colon. The patient was therefore transferred to the medical department, where he died six weeks after admission to the hospital.

A condensed report of the autopsy protocol enumerating only the essential observations is as follows:

Enlarged masses of lymph nodes were found along the aorta, as well as marked involvement of the tracheobronchial, retroperitoneal and presacral chains. On section the nodes were a grayish white and of firm consistency.

Both lungs showed grayish white membrane-like, slightly elevated areas on the pleural surfaces.

In the proximal sigmoid was a firm, annular lesion with rolled borders which projected into the lumen of the bowel. It measured 3 cm. in diameter. The mucosa was ulcerated and replaced by a fungating mass.

The prostate was moderately enlarged and semifirm to firm in consistency. On section its normal architecture was obscured by multiple grayish white plaques with irregular outlines. There was no obvious obstruction of the prostatic urethra.



Fig. 4.—Primary adenocarcinoma of sigmoid colon. Note infiltration of muscularis and submucosa by anaplastic cells, arranged in acinous and tubular conformation.

The posterior columns of the cord were small and atrophic, and in the middorsal region were areas of softening. There was some atrophy of the left cerebral cortex.

The microscopic report of the three tumors follows:

Right Kidney (removed in 1915).—The tumor varied in characteristics from areas with solidly packed cells to areas with reproduction of glandular lumens and proliferation of cells in papilliferous arrangement. The cells varied markedly in size and shape. In the more papilliferous portions there were large oval

cells with abundant eosinophilic cytoplasm and round, moderately chromatic nuclei. In these areas as well as elsewhere there were smaller cells with less cytoplasm and more hyperchromatic nuclei. Few mitotic figures were evident. Fibrous connective tissue was abundant and contained a marked lymphocytic infiltration. In one area several hyalinized and partially hyalinized glomeruli were present.

Prostate.—Within the prostatic parenchyma, which was involved by diffuse hyperplasia of the glandular structures, were several areas in which the epithelium of the acini completely filled their lumens. The cells were large, from oval to polygonal in shape, and contained a faint eosinophilic cytoplasm. Cell borders were distinct. The nuclei were large, oval to round in outline, pale and containing faint chromatin granules with prominent nucleoli. Atypical mitotic figures were frequently present. Elsewhere definite structure was absent and the connective tissue and smooth muscle were widely infiltrated by rounded masses, strands and individual cells of similar type interspersed, however, with many smaller cells containing hyperchromatic nuclei. In several smaller vessels, masses of both types of cells plugged the lumens. They were also characteristically arranged about some of the nerve fibers.

Lung Metastases.—Sections from the lungs revealed solid masses of cells similar to those in the prostate invading perivascular connective tissue and extending along the septal walls. The characteristic large vesicular nuclei with prominent nucleoli were noteworthy.

Sigmoid.—Sections from the tumor in the sigmoid colon revealed degenerative and necrotic changes in the mucosa with loss of cell outlines, pyknosis and fragmentation of nuclei, and also an infiltration with lymphocytes. The submucosa and muscularis, the latter much thickened, were widely infiltrated by irregular acinous and tubular structures lined by one or two layers of extremely anaplastic cells. A basement membrane was not present. The cells varied greatly in size and ranged in shape from spindle to oval to columnar. Their nuclei varied extremely from hyperchromatic spindle-shaped types to large pale oval types with small chromatin granules and occasional large nucleoli. Atypical mitotic figures were present in moderate number. In many of the glandular lumens a pale mucoid material was present.

The pathologic diagnosis after autopsy was (1) absent right kidney; (2) primary carcinoma of the prostate with metastases to the lungs, retroperitoneal, presacral and tracheobronchial lymph nodes; (3) primary adenocarcinoma of the sigmoid colon with stenosis of its lumen; (4) multiple adenomas of the left kidney; (5) compensatory hypertrophy of the left kidney; (6) generalized arteriosclerosis and coronary sclerosis; (7) healed myocardial infarct, and (8) fibrosis of the myocardium.

COMMENT

A man who died in 1936 had been operated on twenty-one years before for adenocarcinoma of the kidney. He later was affected with two other primary cancers in distinct and separate organs, one of which, that of the prostate, produced metastases to the lungs and lymph nodes. All three cancers were diagnosed clinically.

It is my belief, after a rather complete survey of the literature, that:

1. Multiple primary cancers are more frequent than are reported.
2. They occur more frequently than chance alone would explain.

3. The percentage of multiple primary malignant tumors to be reported in the future will be higher than that recorded in the past, because

- (a) More people are reaching advanced years, a period in which the incidence of cancer is generally high.

- (b) Since the inauguration of cancer clinics and commissions throughout the world, cancer patients have been more concentrated and more thoroughly studied.

- (c) Better results are being obtained in the treatment of cancer than heretofore.

- (d) As a result of longer survival after treatment for a single primary tumor, time is afforded for the development of subsequent primary cancers.

- (e) Autopsies are more widely done and with greater thoroughness than in the past.

4. Some factor, as yet unknown, possibly hereditary or hormonal in nature, plays an important part in susceptibility to malignant disease and the varied responses to environment in different individuals depends on this unknown element.

25 East Washington Street.

THROMBOSIS OF THE AXILLARY VEIN

REPORT OF FIVE CASES WITH COMMENTS ON ETIOLOGY, PATHOLOGY AND DIAGNOSIS

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Thrombosis of veins is common in the pelvic region and in the lower extremities. It may follow abdominal operations or develop during the puerperium. Thrombus formation in the veins of the upper extremities, secondary to such conditions, is not common, and thrombosis of the axillary vein caused by effort is comparatively rare.

As a clinical entity the condition was first described by Von Schrötter in 1884. Cadenat¹ in 1920 reviewed twenty-four cases from the literature. Paggi² in 1933 collected reports of seventy-four cases from medical writings. Matas³ in 1934 reported one case and reviewed the literature of approximately 100 cases. Since then about twenty additional cases have been described by various observers, but great numbers have not been observed by any one person.

A review of the cases by the various authors showed that the patients were young, in good health and engaged in work. Although males were affected to a greater degree, cases in females were reported by Rosenthal,⁴ Cadenat,¹ Winterstein,⁵ Finkelstein⁶ and Clute.⁷ The right arm was affected more often than the left, and those in whom the left arm was involved were either left handed or threw an unusual strain on the left hand. The condition followed an unusual or sudden effort contracted while engaged in heavy work or developed after a casual strain such as is associated with checking and restraining a horse.⁸ It also followed strains that resulted from causes such as swinging at a golf ball, pitching a baseball or exercising in a gymnasium.⁹ Cases have also been reported in which

From the Peripheral Vascular Disease Clinics of the Gouverneur and Bellevue hospitals.

1. Cadenat, F. M.: *Les thrombophlébites du membre supérieure*, Paris méd. 35: 253-259 (March 20) 1920.

2. Paggi, B., quoted by Matas.³

3. Matas, Rudolf: *Primary Thrombosis of the Axillary Vein Caused by Strain*, Am. J. Surg. 24: 642-666 (June) 1934.

4. Rosenthal, W. J.: *Ueber Thrombose an der oberen Extremität nach Anstrengungen*, Deutsche Ztschr. f. Chir. 117: 405-424 (July) 1912.

5. Winterstein, O.: *Ueber Gefässverletzungen mit Beiträgen zum traumatischen segmentären Arterienkrampf und zur "traumatischen" Thrombose der Vena subclavia*, Schweiz. med. Wchnschr. 55: 360 (April 23) 1925.

6. Finkelstein, B.: *Benigne Thrombose der oberen Extremität*, Deutsche med. Wchnschr. 35: 198 (Jan. 28) 1927.

7. Clute, H. W.: *Idiopathic Thrombosis of the Axillary Vein*, S. Clin. North America 11: 253-259 (April) 1931.

8. Scheppleman, E.: *Kasuistische Beiträge zur Venenthrombose mit besonderer Berücksichtigung älterer und neuerer Theorien der Thrombose*, Hebeite 2. med. Klin. 7: 23-54, 1911.

9. Barker, N. W.: *Axillary Thrombophlebitis Caused by Strain or Effort*, Proc. Staff. Meet., Mayo Clin. 10: 156 (May 6) 1935.

the thrombus developed spontaneously without any accidental strain.¹⁰

I am herewith presenting five cases of thrombosis of the axillary vein in males. At the time this process developed the patients were in good health and showed no pathologic defects to account for such a condition.

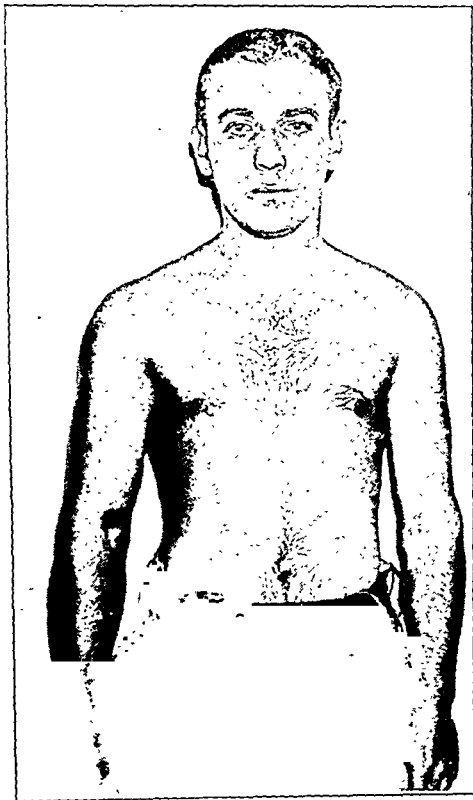


Fig. 1 (case 1).—Comparative size of the arms, the right being larger than the left.

REPORT OF CASES

CASE 1.¹¹—J. C., a man, aged 24, admitted to the clinic July 1, 1936, complained of enlargement and hardness of the right upper extremity and prominence of the veins of the right arm as compared with the left. For the previous year and a half he had been employed as a clothes presser, at which occupation he used his right arm constantly. The past and family history were entirely negative. Three months prior to his coming to the clinic, he suffered from a cellulitis of the right leg. This was treated by rest and by wet dressings and subsided without any operative intervention. One month prior to his appearance at the clinic his attention was called to the fact that his right hand was larger than the left and that the fingers of the right hand were darker than those of the left. The right upper extremity, as far as he could remember, had never been swollen and there had been no impairment of function at any time.

The patient was robust and well nourished; he weighed 147 pounds (66.7 Kg.) and was 65 inches (165 cm.) tall. The general physical examination was entirely negative except for the right upper extremity.

The right upper extremity from the shoulder girdle to the fingertips was larger than the left. The skin had a slight tinge of rubor. Fulness over the anterior wall of the chest below the clavicle and prominence of the veins over the internal aspect

of the arm and the axilla and the anterior aspect of the chest were noted. The veins collapsed slowly on elevation. There was no clubbing of the fingers; no cord or lymph glands were palpated in the axilla. The enlargement was due to a brawny induration. Motion in the joints was unrestricted and sensations were unimpaired. Pulsations in the brachial, radial and ulnar arteries were equal in rate and rhythm as compared with the left. The hand grips were equal in force. The pulses of the lower extremities were all open. The measurements of both upper extremities are given in table 1.

TABLE 1.—Measurements of Both Arms (Case 1)

	Right	Left
At junction of humerus and shoulder.....	39.6 cm.	33 cm.
Midhumeral	30.5 cm.	27 cm.
Elbow	28.5 cm.	26.2 cm.
Midforearm	27.5 cm.	24.6 cm.
Wrist	18.5 cm.	16.5 cm.
Hand	22.25 cm.	20.5 cm.
Temperatures at different levels measured with an electric potentiometer were equal		
Midhumeral	31.8 C.	31.5 C.
Midforearm	32.6 C.	32.5 C.
The blood pressure on the affected side was less than on the other side		
	90/50	95/60
The oscillometric index on the right side was less than that on the left		
Midhumeral	10	11 plus
Midradial	5	6
The venous pressure was increased on the right side		
Cephalic vein	2.8 mm.	118 mm.
Basilic vein	290 mm.	100 mm.
The blood count and urine were normal and the Wassermann reaction of the blood was negative		

Radiographic examination of the chest, cervical spine and right shoulder failed to reveal any tumor masses, presence of the cervical rib or changes in the joints.



Fig. 2 (case 1).—Visualization of upper extremities by means of infra-red rays. The veins of the right arm and of the right side of the chest are more numerous and prominent.

Radiographic examination of the right upper extremity following the injection of 10 cc. of thorium dioxide sol into the median cephalic vein visualized the vein up to the junction of the upper and middle third of the humerus, at which point numerous venous collaterals were seen on the external aspect of the humerus. Collaterals were also noted in the shoulder and supraclavicular regions. The cephalic vein failed to empty

10. Pellot: Un cas de thrombose veineuse du membre supérieur droit (phlébite par effort), *Presse méd.* 24: 523 (Nov. 20) 1926. Lohr, W.: Ueber die sogenannte traumatische Thrombose der Vena Axillaris und Subclavia, *Deutsche Ztschr. f. Chir.* 214: 263-299 (Feb.) 1929. Veal, J. R., and McFetridge, E. M.: Primary Thrombosis of the Axillary Vein, *Arch. Surg.* 21: 271-289 (Aug.) 1935.
11. Kaplan, Theodore, and Katz, Abraham: Thrombosis of the Axillary Vein, *Am. J. Surg.* 37: 326-333 (Aug. 1) 1937.

directly into the axillary. Two venous segments were also noted in the infraclavicular region, the upper one corresponding to the terminal portion of the cephalic vein at the site where it usually empties into the axillary, and the lower one representing the narrowing of the axillary vein. It received the venous tributary running from the point of the interruption to the cephalic vein across the humerus to be joined by the long thoracic vein that is visualized. Another venous collateral was also seen coming across just at the level of the head of the humerus and emptying into the same segment.

Examination of the right arm immediately after the first plate was taken revealed the dye still present in the vein at the level of the junction of the middle and upper thirds of the humerus, and several venous collaterals were still visualized on the external aspect of the shoulder. The two venous segments previously reported were still visualized, and the collaterals emptying into it were no longer seen.

Examination of the right upper extremity following the injection of 10 cc. of thorium dioxide sol into the median basilic vein showed the basilic vein to be well visualized and

the veins became prominently displayed over the arm and chest, and the right arm became red as compared with the left.

The patient was robust and well nourished; he weighed 170 pounds (77 Kg.) and was 70½ inches (179 cm.) tall. The

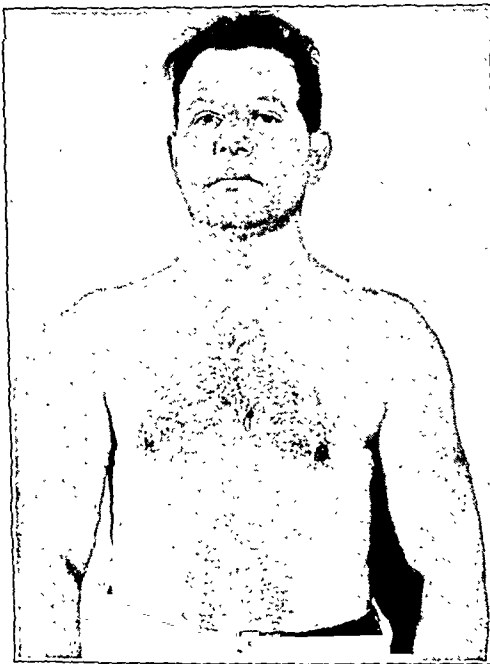


Fig. 3 (case 3).—Comparative size of the arms, the left being larger than the right.

istended. The valves were dilated and the vein was tortuous. Examination of the right arm, directly after the previous plate was taken, revealed the dye to be still faintly present at the site of the valves.

Infra-red photography of the right pectoral and upper arm regions visualized more veins as compared with the left.

CASE 2.—D. H., a man, aged 25, employed as a salesman, admitted to the clinic Sept. 11, 1936, complained of a difference in the size of his arms, the right being larger than the left. His previous history, both personal and family, was irrelevant.

In the latter part of May 1935, after pitching a ball, he felt a slight soreness in the muscles of the right arm. He massaged the arm and obtained relief temporarily. The following morning the arm was painful, and toward evening the entire right upper extremity was swollen and blue. There was never any acute pain, although function in the arm was impaired; nor was he confined to bed because of a rise in temperature. He kept the arm in a sling and applied wet dressings, and the edema subsided. However, after the slightest exertion, such as carrying a 5 pound weight, the arm from the wrist to the shoulder would become swollen, tired and heavy. When he awoke in the morning the arm always seemed normal in size and color. As time went on, however,



Fig. 4 (case 3).—Film taken immediately after the injection of 10 cc. of thorium dioxide sol into the cephalic vein. The cephalic vein is visualized up to the level of the surgical neck of the humerus, at which point it terminates into a Y bifurcation. The lateral thoracic vein is filled, as well as the jugular in the neck above the clavicle, with a back-flow downward anteriorly to the level of the second rib. The veins in the neck are seen to make a loop terminating below the clavicle.

entire physical examination was negative save for the upper right extremity. The latter was larger than the left with fulness over the right upper wall of the chest anteriorly.

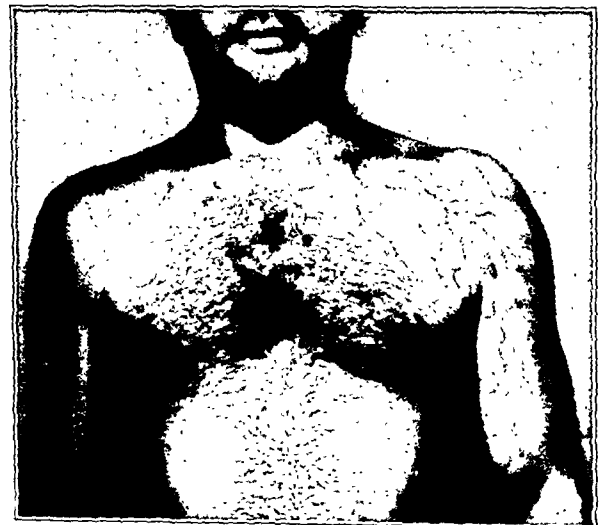


Fig. 5 (case 3).—Numerous superficial veins over the left arm, shoulder region and chest visualized by infra-red rays.

Numerous veins were seen over the forearm and arm, in the axilla and anteriorly over the chest. The veins collapsed slowly on elevation and no clubbing of the fingers was noted. A cord present in the axilla was not tender. No lymph glands were palpable in the cervical and axillary regions. The pulses were

open and were equal in rate and rhythm as compared with the left. Motion was unrestricted, sensations were unimpaired and the reflexes were normal. The measurements of both upper extremities are shown in table 2.

Injection of the right median basilic vein with 10 cc. of dye revealed the basilic vein to be dilated and the valves prominent.



Fig. 6 (case 4).—Increase in the number of superficial veins of both arms shown by infra-red rays.

No collaterals were visualized. A film taken immediately after the first plate showed the dye to be still present at the site of the valves.

TABLE 2.—Measurements of Both Arms (Case 2)

	Right	Left
At junction of humerus and shoulder.....	33.75 cm.	30 cm.
Midhumeral	30 cm.	27.5 cm.
Elbow	27.5 cm.	26.25 cm.
Midforearm	27.5 cm.	25 cm.
Wrist	17.5 cm.	17 cm.
Hand	23.75 cm.	22.5 cm.
The temperature of the right upper extremity at different levels was definitely less than that of the left		
Midhumeral	31.8 C.	32.4 C.
Elbow	31.8 C.	33.2 C.
Midforearm	31.0 C.	33.2 C.
Wrist	32.0 C.	32.6 C.
The blood pressure of the right arm was greater than that of the left		
	130/72	120/70
The oscillometric index on the right side was greater than on the left		
Midhumeral	11 plus	10 plus
Midradial	5½	4 plus
The venous pressure was increased in the right arm		
Basilic vein	200 mm.	100 mm.
The circulation time with calcium gluconate in the affected side was prolonged		
Basilic vein	27 seconds	14 seconds
The blood count and urine showed no abnormalities and the Wassermann reaction of the blood was negative		

Photographs taken with infra-red technic revealed an increase in the number of veins in the right upper extremity as compared with the left.

CASE 3.—L. K., a man, aged 42, employed as a tailor, admitted to the clinic in February 1937, complained of an enlargement of the left arm of twenty years' duration.

His past and family history was negative. Twenty years before he was admitted he fell in the street and injured his left hand. Four hours later the entire upper extremity became swollen, and he was unable to lift anything. The swelling lasted for two days, during which time he was disabled. Since then he has been working, although his left arm feels weak.

In August 1936, after lifting a weight, his hand became red, painful and swollen and has so continued.

Inspection of both upper extremities revealed the left arm, which had a dusky color, to be larger than the right. The veins were markedly prominent over the left arm, left side of the chest and the left axilla as compared with the right, and collapsed slowly on elevation. A distended vein could be seen running over the neck anteriorly and over the chest. A cord

TABLE 3.—Measurements of Both Arms (Case 3)

	Right	Left
Junction of shoulder and arm.....	29 cm.	33.5 cm.
Midhumeral	28 cm.	33 cm.
Elbow	24.5 cm.	28 cm.
Forearm	26 cm.	28.5 cm.
Hand	21.4 cm.	22.25 cm.
The temperature measured with an electric potentiometer was slightly greater on the right side		
Midhumeral	32.8 C.	32.4 C.
Midforearm	31.8 C.	31.6 C.
Index finger	31.2 C.	30.4 C.
The blood pressure on the affected side was less than on the other		
	136/84	118/80
The oscillometric index on the left side was less than on the right		
Midhumeral	15 plus	11 plus
Wrist	8	5
Circulation time with calcium gluconate was prolonged in the left basilic vein		
Basilic vein	10½ seconds	18½ seconds
The venous pressure was increased on the affected side		
Cephalic vein	110 mm.	180 mm.
The urine and blood count were normal and the Wassermann reaction of the blood was negative		

could be felt in the axilla but it was not tender. The pulses were open and of equal intensity. The hand grip on the left side was weaker than that on the right.

The measurement of the extremities showed the left to be definitely larger than the right (table 3).

Injection of 10 cc. of thorium dioxide sol into the cephalic vein visualized it up to the level of the surgical neck of the



Fig. 7 (case 4).—Film taken immediately after 10 cc. of thorium dioxide sol was injected into the median basilic vein. The vein is dilated with collaterals in the supracondyle region on the internal aspect of the humerus. Numerous collaterals are seen on the external aspect of the arm. Communicating branches between the basilic vein and the collaterals are seen. The valves are markedly dilated. The lateral thoracic vein is partly filled. Veins are visualized in the supraclavicular and cervical regions.

humerus, at which point it terminated with a bifurcation into a Y. The lateral thoracic vein was seen filled, as well as the jugular in the neck above the clavicle, with a backflow downward anteriorly to the level of the second rib. The veins in

the neck are seen to make a loop terminating below the clavicle. The second film, taken about two minutes later, still visualized the lateral thoracic vein.

Infra-red photographs revealed a marked increase in the number and distribution of the veins in the left side as compared with the right.

CASE 4.—H. C., a man, aged 40, an Albanian, reporting to the clinic April 23, 1937, complained of a painful and swollen

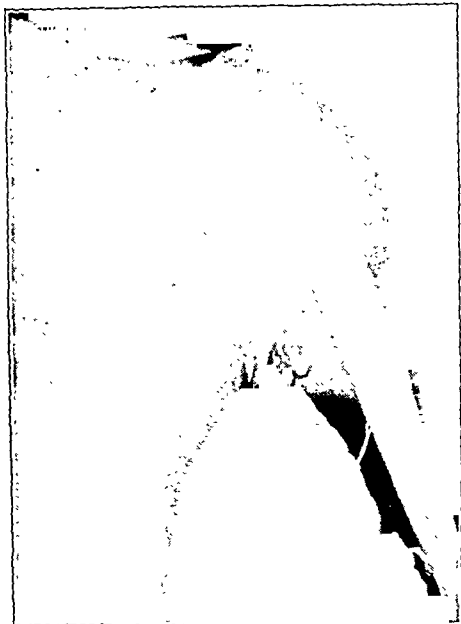


Fig. 8 (case 4).—Second film, taken two minutes after figure 7, showing the dye present in the vein. The valves are not as well visualized as in the previous film. The veins in the neck and supraclavicular regions are not seen.

upper extremity. April 21, 1937, at about 8 a. m., he lifted a cake of ice and experienced a slight pain in the arm. At 11 o'clock he noticed that his right hand became stiff, swollen

TABLE 4.—Measurements of Both Arms (Case 4)

	Right	Left
Junction of shoulder and arm.....	34 cm.	32 cm.
Midhumeral	31 cm.	27 cm.
Elbow	27 cm.	24 cm.
Midforearm	50 cm.	27 cm.
Wrist	17.5 cm.	16.5 cm.
Hand	23.5 cm.	22 cm.
The temperature measured with an electric potentiometer was slightly greater on the left side		
Midhumeral	30 C.	31.5 C.
Midforearm	30.6 C.	31.6 C.
Thumb	30 C.	32.4 C.
Index finger	32 C.	32 C.
Middle finger	31.2 C.	32 C.
Ring finger	31.2 C.	32 C.
Little finger	31.2 C.	32 C.
The blood pressure on the affected side was less than on the left side		
	120/70	136/80
The oscillometer readings on the right side was lower than on the left		
Midhumeral	9	11
Wrist	4	4½
The circulation time with calcium gluconate was prolonged		
Basile vein	24 seconds	14 seconds
The venous pressure was markedly increased in the right basile vein		
Basile vein	420 mm.	120 mm.
The blood count and urine were normal and the Wassermann reaction of the blood was negative		

veins collapsed slowly on elevation. No tender cord was felt in the axilla. The fingers were larger than those on the left and were cyanotic. The pulses were open.

The measurements of both upper extremities are given in table 4.

A film taken immediately after the injection of 10 cc. of thorium dioxide sol into the median basilic vein showed the vein to be dilated with collaterals in the supracondylar region on the internal aspect of the humerus. Numerous collaterals were seen on the external aspect of the arm. Communicating branches between the basilic vein and the collaterals were seen. The valves were markedly dilated. The lateral thoracic vein was filled in part. Veins were also seen in the supraclavicular and cervical regions.

A second film taken two minutes after the first visualized the dye in the vein, although the caliber was diminished. Occasional collateral veins were seen on the external aspect, and the veins in the neck were no longer visualized.

A third film taken ten minutes after the injection showed shadows of dye remaining in the basilic vein at the site of the valves.

Infra-red photography showed numerous veins on both upper extremities but more on the right.

CASE 5.^{11a}—J. R., a Negro, aged 37, employed as a garage worker, reporting to my office on May 15, 1937, complained of pain and enlargement of the left arm. On April 13, 1937, he picked up an automobile battery from the floor and, as he did so, felt a sudden pain in the left arm. The pain was so sharp that he had to drop the battery. One-half hour later his arm became swollen and turned blue. He was treated with rest in bed, heat and massage, and the edema subsided. On May 10

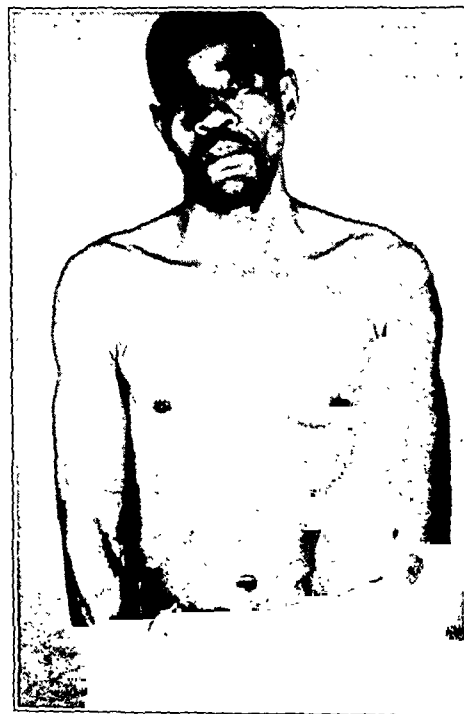


Fig. 9 (case 5).—Increased number of veins over the anterior aspect of the chest, arm and forearm visualized by infra-red rays.

he returned to work. The swelling returned, however, and he was forced to discontinue work.

Examination was negative save for the local condition of the left upper extremity. The left arm was larger than the right. The veins were markedly dilated over his arm and side of the chest and did not collapse on elevation. On the left lateral thoracic wall a prominent dilated vein was noted. A hard tender cord was felt in the left axilla, which was continuous

^{11a}. This patient was seen through the courtesy of Dr. Saul S. Samuel of New York.

and cold. He kept the hand over a gas heater to warm it up, but the swelling progressively increased. The pain was constant and dull in character, and he was unable to work.

Examination was negative except for the local condition. The right arm was larger than the left and the skin had a dusky color. The veins stood out prominently over the arm and chest, and venules were noted on the right side of the chest. The

along the course of the basilic vein down to the midforearm, and the entire vein was thrombosed and, because of the thrombosis of the basilic vein, the venous pressure, circulation time and venograms were not taken.

The measurements of both upper extremities are given in table 5.

Infra-red photographs showed numerous veins over the anterior chest, axilla and arm, as compared with the right.

ETIOLOGY

According to Cadenat,¹ Von Schrötter in 1884 described this condition and advanced the theory that, as a result of a sudden stretching and compression of the vein, a localized phlebitis followed, which in turn produced a thrombosis of the vein. Lowenstein¹² in 1924 dissected thirty-seven cadavers and found that with the arm in the abducted position in certain cadavers, the costocoracoid ligament and subclavius muscle indented the axillary vein. When the arm is held in abduction or extension the axillary vein is distended. Distention of the axillary vein with pressure on it by the costocoracoid ligament and subclavius muscle was sufficient to produce thrombosis.

Gould and Patey¹³ confirmed this observation. They injected plaster of paris into the axillary vein of cadavers with the arm in the abducted position and

were subjected to culture. In four of the seven thrombi the cultures were sterile. In the others the cultures yielded bacterial growths, but changes in the vessel wall indicated the presence of a severe inflammatory type of septic phlebitis. Other evidences against infection are, however, the clinical history, the absence of a rise in temperature and the absence of other concomitant signs and symptoms of infection. Matas also quoted Cottalorda, who advanced the theory that the lesion need not necessarily consist of a thrombus formation but that the vein may be held in a spastic state as a result of the irritation of the perisymphatic venous plexus. However, in the majority of cases, extensive thrombus of the vein has been found. The only case substantiating the theory of spasm was that reported by Cottalorda, who, on operation, found no thrombus but the vein in a spastic state.

PROGNOSIS

Prognosis as to life is good. The duration of the disability is variable. Patients may be completely restored in from one to two months and in many cases the convalescence is prolonged because of edema, weakness and stiffness of the arm. Recurrences are occasionally noted following exertion.

TREATMENT

In the acute stage the treatment consists of rest, elevation and hot moist packs locally. If there is residual edema, an elastic bandage may be applied spirally, beginning at the hand and extending upward to the shoulder. Diathermy is of value in reducing the swelling. In obstinate cases, excision of the thrombus or the entire segment of the thrombosed vein has been recommended. However, the advisability of such procedures is questionable, since after removal of the thrombus recurrence is likely, and if the venous segment is resected the chance for canalization of the organized thrombus is lost.

DIAGNOSIS

The diagnosis of primary axillary thrombosis is made on the following symptoms and signs:

1. Swelling of the arm and cyanosis within several hours or days after the accident, injury by strain or, occasionally, without any cause.
2. The absence of a rise in body temperature and absence of signs of local active inflammation.
3. The presence of dilated superficial veins on the affected arm and over the anterior part of the chest and also in the axilla.
4. The delay or absence in the collapse of the superficial veins of the upper extremity when the latter is raised above the heart level.
5. The presence of a cord in the axilla, which need not always be tender.
6. The increase of the venous pressure in the affected extremity.
7. Prolongation of the circulation time in the affected arm.
8. X-ray visualization of new collateral formation, enlargement and dilatation of the veins, evidence of stasis, on injection of radiopaque dyes into the veins of the affected arm, and the failure of the axillary vein to be visualized.
9. The presence of numerous superficial veins on the affected side as shown by photography with the infra-red technic.

224 East Fifteenth Street.

TABLE 5.—Measurements of Both Arms (Case 5)

	Right	Left
At junction of shoulder and arm.....	26 cm.	26 cm.
Midhumeral	27 cm.	29.5 cm.
Elbow	25 cm.	26 cm.
Midforearm	26 cm.	26 cm.
Wrist	16.5 cm.	17.5 cm.
The potentiometer was slightly less .		
Midhumeral	33.6 C.	33.2 C.
Thumb	33.8 C.	32.8 C.
Index finger	34.2 C.	33.6 C.
Middle finger	33.6 C.	33.4 C.
Ring finger	32.8 C.	32.4 C.
Little finger	32.8 C.	32.4 C.
The blood pressure on the affected side was slightly less than on the other side		
	96/70	92/70
The oscillometric index on the right side was equal to that on the left		
Midhumeral	14	14
Wrist	4	4

observed, in two cases, deep grooves corresponding in one to the pressure of the subclavius muscle and, in another, a shallow groove corresponding to the position of the costocoracoid ligament. They also demonstrated a competent bicuspid valve at the level of the subclavius muscle which was so placed that pressure of the muscle stretched the wall of the vein in its long axis. They were of the opinion that the subclavius is responsible for trauma to the vein and that, as a result of this trauma, a valve is ruptured. This rupture, according to them, is the fundamental basis for the thrombus.

Veal and McFetridge¹⁰ on the basis of roentgen and autopsy studies reported that the constriction of the vein occurred, not as was previously believed over the first rib beneath the subclavius muscle, but below the head of the humerus and against the subscapularis muscle.

Although these facts may be true in cases in which marked trauma has occurred, it still does not explain the cases in which trauma was slight or those occasional spontaneous cases without any history of injury.

As for infection, Matas reported twenty-seven cases in which the thrombus was removed and seven of them

12. Lowenstein, P. S.: Thrombosis of the Axillary Vein: An Anatomic Study, J. A. M. A. 82: 834-837 (March 15) 1924.
13. Gould, E. P., and Patey, D. H.: Primary Thrombosis of the Axillary Vein, Brit. J. Surg. 16: 208-213 (Oct.) 1928.

NICOTINIC ACID IN THE PREVENTION
OF PELLAGRA

A PRELIMINARY NOTE

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AND
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As a natural sequel to the discovery that nicotinic acid is highly effective in the cure of canine black-tongue¹ and in the rapid relief of part at least of the syndrome of human pellagra,² it was determined to test the potency of this substance as a preventive of relapse in known pellagrins. The present report deals with observations made on a group of such individuals under reasonably adequate control.

METHOD AND MATERIALS

Subjects.—Thirty-three patients were chosen from the files of an outpatient pellagra clinic which is conducted annually from March 1 to December 1 and which has some 350 clients. Only persons known to have had severe pellagra in previous years and showing definite symptoms of relapse on March 9, 1938, were selected for the experiment. Sixteen persons were given nicotinic acid; the remaining seventeen constituted a control group and were given the customary ration of brewers' yeast. No attempt to modify the diet or environment was made in any case, since it seemed obvious that the diet used by these people was productive of pellagra. Two men were chronically alcoholic; all other patients were typical endemic pellagrins. The data regarding age, race, sex, number of previous attacks of pellagra and the severity of presenting symptoms are summarized in tables 1 and 2.

Dosage.—No information was available regarding the amount of nicotinic acid necessary to prevent the recurrence of pellagra. It was decided to try the effect of 100 mg. given twice a week. Dr. Spies³ at the time concurred in the idea that this amount might be effective. The control group was given dried brewers' yeast 90 Gm. daily, the amount employed as a routine for prevention in this clinic.

Control.—All patients were seen on Wednesday of each week by an experienced observer, who noted the progress of all symptoms and signs and dispensed nicotinic acid in capsules containing 100 mg., one to be taken on Thursday and Monday of each week. All observations were made by the same individual. Treatment was begun March 16, 1938, and continued until April 27, 1938, when this experiment was terminated.

Materials Used.—Nicotinic acid was the crystalline preparation of the Eastman Kodak Company; brewers' yeast was Fleischmann's product, furnished by the American Red Cross.

From the University of Georgia School of Medicine and the University Hospital.

Invaluable aid was given by the local chapter of the American Red Cross in the conduct of the Pellagra Clinic and the provision of yeast and a portion of the nicotinic acid used in this study.

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2. Fouts, P. J.; Helmer, O. M.; Lepkovsky, S., and Jukes, T. H.: Treatment of Human Pellagra with Nicotinic Acid, *Proc. Soc. Exper. Biol. & Med.* 37: 405 (Nov.) 1937. Smith, D. T.; Ruffin, J. M., and Smith, S. G.: Pellagra Successfully Treated with Nicotinic Acid, *J. A. M. A.* 100: 2054 (Dec. 18) 1937. Spies, T. D.; Cooper, Clark, and Blankenhorn, M. A.: The Use of Nicotinic Acid in the Treatment of Pellagra, *ibid.* 110: 622 (Feb. 26) 1938. Authors' unpublished observations. Spies, T.

3. Spies, T. D.: Personal communication to the authors.

RESULTS OF TREATMENT WITH YEAST

The comparison of results in the two groups can best be made by reference to the tables. It is apparent that the majority of patients studied were in age groups in which senile and arteriosclerotic changes may have contributed largely to the occurrence and persistence of mental symptoms. Frank neurologic disturbances were not observed. It is also obvious that the group treated with nicotinic acid was composed of persons who had suffered more frequent attacks of pellagra than most of the controls. Some degree of glossitis persisted in all but one of the patients given yeast but their general improvement was satisfactory, none regressed and all showed marked subjective as well as objective relief with restoration of appetite and gain in strength and weight.

RESULTS OF TREATMENT WITH NICOTINIC ACID

In the group treated with nicotinic acid there were interesting variations. During the first two weeks improvement of glossitis and of appetite were noted in

TABLE 1.—Results of Treatment with Yeast

Number	Initials	Previous Attacks	Age	Race	Sex	Before Treatment					After Treatment				
						Glossitis	Stomatitis	Dermatitis	Diarrhea	Loss of Weight	Glossitis	Stomatitis	Dermatitis	Diarrhea	Loss of Weight
1	E. L.	1	71	W	♂	2	1	1	2	0	1	0	0	0	0
2	E. P.	1	58	W	♀	3	1	0	1	1	2	1	0	0	0
3	S. W.	1	66	W	♀	2	0	0	0	0	2	1	0	0	0
4	G. E.	3	63	W	♂	1	1	0	0	1	2	1	0	0	0
5	O. S.	1	50	W	♀	3	1	0	0	0	3	2	0	0	0
6	M. P.	1	58	W	♀	2	1	0	0	1	0	1	0	0	0
7	M. B.	20	91	W	♀	2	1	2	0	0	3	1	1	1	0
8	L. S.	9	45	W	♀	1	0	0	0	1	1	0	0	0	0
9	M. F.	2	36	W	♀	2	1	0	1	2	2	1	0	0	0
10	H. G.	1	49	W	♂	3	2	1	0	2	4	1	0	0	0
11	M. R.	1	49	W	♀	2	1	0	0	0	3	2	0	0	0
12	E. S.	1	49	W	♀	2	0	0	0	1	3	1	0	0	0
13	E. H.	3	47	W	♀	2	0	0	0	1	2	1	0	0	0
14	L. D.	2	35	C	♀	3	1	0	0	0	0	1	0	0	0
15	M. B.	1	69	W	♀	2	1	1	0	1	0	1	0	0	0
16	O. A.	4	65	W	♀	2	2	1	0	0	1	1	0	0	0
17	S. R.	2	55	C	♂	4	2	0	2	1	1	1	0	0	0

Summary of results obtained in patients treated with 90 Gm. of brewers' yeast daily from March 16 to April 27, 1938. The figures in the columns under the signs and symptoms listed indicate severity: 1, mild; 2, moderate; 3, severe; 4, very severe.

all, the changes in the appearance of their tongues being more striking than in the controls. After this time the progress of different individuals was most irregular. Patient 10 continued to improve; he was a chronic alcoholic addict and was frightened into complete sobriety. Patients 1, 2, 6, 7, 8, 11, 12, 14 and 16 improved in all respects for four weeks and then showed recurrence of glossitis with gradual loss of appetite and strength, so that their condition at the end of the sixth week was not appreciably different from that at the beginning of treatment. Patient 4 was much better during the third and fourth weeks with good appetite, regeneration of lingual papillae and resolution of dermatitis; during the last two weeks there was loss of appetite, recurrence of nervousness and weakness and dermatitis of the nose; the tongue remained good. The remaining five patients, 3, 5, 9, 13 and 15, began to show definite signs of relapse during the fourth and fifth weeks, glossitis recurred in all, and diarrhea

appeared and became severe in case 9. The other four lost appetite, weight and strength and patient 13 became severely demented and was hospitalized.

The tables, which record the condition of the two groups at the beginning and end of treatment, do not reflect the rather dramatic early improvement and later regression of the patients treated with nicotinic acid. A factor which cannot be neglected is the actual food value of the yeast given the control group as well as the possible effect of the vitamin B₁ and various fractions of B₂. The addition of somewhat over 300 calories, including approximately 40 Gm. of protein of good biologic value, to the daily ration of these people is important. The nicotinic acid content of the daily dose of yeast was probably about 15 mg.

SUMMARY AND CONCLUSIONS

1. Thirty-three known chronic pellagrins were selected from a large number applying for preventive

TABLE 2.—Results of Treatment with Nicotinic Acid

Number	Initials	Previous Attacks	Age	Race	Sex	Before Treatment					After Treatment				
						Glossitis	Stomatitis	Dermatitis	Diarrhea	Loss of Weight	Glossitis	Stomatitis	Dermatitis	Diarrhea	Loss of Weight
1	C. J.	3	51	C	♀	1	0	2	1	1	1	0	2	0	2
2	W. B.	2	54	W	♀	1	0	1	0	0	1	0	1	0	1
3	M. A.	5	59	W	♀	2	0	0	0	0	3	1	2	0	2
4	J. A.	3	50	W	♀	1	0	1	0	0	3	1	2	0	2
5	I. M.	3	58	W	♀	3	1	1	0	0	4	2	1	0	2
6	B. R.	4	50	C	♀	1	0	0	0	0	1	2	0	0	1
7	S. F.	9	66	W	♀	1	0	0	0	0	1	1	0	0	0
8	W. S.	8	58	W	♀	1	0	1	0	0	2	0	2	0	1
9	R. M.	1	41	W	♀	2	0	0	0	0	3	1	0	2	3
10	H. C.*	1	43	W	♀	1	1	0	0	0	2	0	0	0	0
11	F. W.	3	47	C	♀	2	0	2	0	1	2	2	0	2	1
12	M. S.	2	42	W	♀	1	0	0	0	0	1	1	0	0	0
13	E. P.	2	62	W	♀	3	2	2	2	1	4	3	2	2	3
14	E. B.	7	51	W	♀	1	0	2	0	2	1	0	1	0	1
15	H. B.*	1	53	W	♀	1	0	3	0	0	2	0	4	0	2
16	I. W.	12	66	W	♀	3	1	0	0	0	2	1	0	0	0

Summary of results obtained in patients treated with 100 mg. of nicotinic acid twice weekly from March 16 to April 27, 1933. The figures in the columns under the signs and symptoms listed indicate severity: 1, mild; 2, moderate; 3, severe; 4, very severe.

* indicates chronic alcoholism.

treatment. Sixteen were treated with nicotinic acid given in doses of 100 mg. twice weekly; seventeen were used as controls and given 90 Gm. of brewers' yeast daily. The observation period was six weeks.

2. In the group treated with nicotinic acid only one patient showed definite improvement at the end of the period. Nine improved for about four weeks and then regressed to about the same status as at the start of the experiment. One patient after good early response was slightly worse at the end, while five who also showed much gain during the first two weeks of treatment were definitely in relapse at the end of the sixth week.

3. In our hands nicotinic acid in doses of 100 mg. twice a week has not been effective in preventing relapse in known chronic pellagrins.

4. From experience in the treatment of acutely ill patients we feel that it is likely that a small daily dose of nicotinic acid may prove more effective or even entirely satisfactory. It is unlikely, however, that nicotinic acid without some improvement in the diet will prevent relapse indefinitely in chronically malnourished individuals.

Clinical Notes, Suggestions and New Instruments

POSTMORTEM CESAREAN SECTION IN TWIN PREGNANCY WITH DELIVERY OF TWO LIVING BABIES

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Since there are so few reports of twins in the literature, it occurred to us that a brief report of the case here reported might be of interest. At the present writing we have been unable to find another report in which twins delivered by postmortem cesarean section have lived for any length of time.

Postmortem cesarean section is one of the oldest practices in obstetrics. Even the old Roman law of Numa Pompilius, the Lex Regia of 715 B. C., decreed that no pregnant woman should be buried until her child had been removed from her womb. Ancient mythology referred to the birth of Bacchus and Aesculapius in this manner. There are laws in the Talmud and of the Roman Catholic church making this imperative.

Of all the postmortem sections done, until comparatively recent times very few living babies have been delivered.

Schops¹ reported statistics on a series of 107 cases from 1836 to 1846 in which not a single living child was extracted. He also reported another series of ninety cases from 1852 to 1868 in which there was no living child. Bohmer² has reported a series of cases in which only 60 per cent of the deliveries were of living babies. Pfaff reported fifty-two cases with twenty-two living children and thirty dead. Schwarz reported 107 cases in 1862 in which there was no living child. In 1914 Hallman collected sixty-eight cases from the literature in only from 61 to 68 per cent of which were there deliveries of living babies. Harrar,³ in reporting his ten cases of postmortem section, reports that three babies were stillborn, five were born alive but died in a short time, one baby was born alive but died on the sixth day of pneumonia, and the last two were living babies and were discharged from the hospital in good condition. In one of his cases there was a twin pregnancy; both babies were born alive but died in about twenty minutes.

Yule⁴ in 1926 reported a twin pregnancy in which the first fetus was delivered dead and the second, about ten minutes later, was extracted and lived.

Numerous other cases have been reported in the recent literature, in most of which the baby has lived. The following are only a few of the reports:

Hoffman⁵ in 1935 reported a case of a section done on a woman dying of convulsions, in which a live baby was delivered.

Roberts⁶ in 1925 also reported a case in which a woman died in a convulsion, with delivery of a living baby.

Phaneuf⁷ says that he has delivered three living babies by postmortem section.

Fallon⁸ in 1926 reported two cases in which delivery of living babies took place, both mothers having died of eclampsia.

Rider⁹ reported a case in 1931 in which the baby lived.

Campbell and Miller¹⁰ reported a case in 1931 in which a living baby was delivered.

1. Schops, cited by Fallon.⁸

2. Cited by Harrar.³

3. Harrar, J. A.: Postmortem Cesarean Section: A Report of Ten Cases. *Am. J. Obst.* 73: 1046 (June) 1916.

4. Yule, G. W.: Note on a Case of Postmortem Cesarean Section in Twin Pregnancy with Survival of One Child. *Edinburgh M. J.* 33: 49-57 (April) 1926.

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6. Roberts, H. G.: Postmortem Cesarean Section: A Living Child. *Brit. M. J.* 1: 829 (May 2) 1925.

7. Phaneuf, L. E.: Cesarean Section: Indications and Technic. *Am. J. Surg.* 35: 446-456 (Feb.) 1937.

8. Fallon, M. F.: Cesarean Section After Death of Mother. *Boston M. & S. J.* 195: 929 (Nov. 11) 1926.

9. Rider, F. D.: Postmortem Cesarean Section with a Living Child. *Nebraska M. J.* 16: 474 (Dec.) 1931.

10. Campbell, A. M., and Miller, J. D.: Postmortem Cesarean Section: Report of Case with Living Child. *J. Michigan State M. Soc.* 30: 921-927 (Dec.) 1931.

Rosin¹¹ also reported a case in 1927 in which a section was done fifteen minutes post mortem and the child lived.

Holden¹² reported a case in 1932 in which a primipara died in convulsions and a postmortem section was done, saving the life of the fetus.

There are a few factors of importance that determine the possibility of extracting a living child. The main one of these is the element of time. De Lee¹³ has stated that a fetus will live if delivered from five to twenty minutes after the death of the mother. Hallman² states that the prognosis is better for the child in "sudden, rapid and violent death, disease of the central nervous system, heart and kidneys, than after long continued or infectious diseases, diseases of the blood, or intoxications in which the blood is altered."

The question of civil or criminal responsibility is to be thought of by any physician who performs a postmortem cesarean section without the consent of the husband or next of kin. This question is still one of controversy and has not been firmly settled. Reichmann, however, makes this statement:

"I cannot escape the conclusion that, given a case in which, in the light of existing scientific knowledge, the belief is reasonably justifiable that the infant may be rescued and its life saved, a cesarean section will be justified by the law on grounds of public policy and the person performing the same will be fully protected, both civilly and criminally, though performed without consent, or even against the protest in those in whom the law has recognized a legal right to the possession of the body of the deceased, provided, of course, the operation be performed in good faith and with due skill and without unnecessary injury or mutilation."

Other legal authorities have fairly well agreed that there is neither a civil nor a criminal violation in doing a postmortem section, even without the consent of the next of kin. Bacon even made this statement: "The obligation to save the human fetal life, when it can be done without destroying or seriously jeopardizing another life, is absolute."

A few authorities are of the opinion that this procedure is usually distasteful to all concerned, but most of them are of the opinion that the physician is morally obligated to do all possible in trying to save fetal life after the death of the mother.

REPORT OF CASE

Mrs. D. C., aged 41, an octipara, presented herself at our office about 11 a. m., Aug. 31, 1937, because of shortness of breath, which was so marked that she had been unable to sleep for the past two weeks unless she was sitting upright. She was pregnant—almost at term—the estimated date of confinement being about September 15. Her youngest child was 5 years of age, and she stated that she had had no trouble with any of her previous pregnancies. She had an increasing amount of edema, which had begun in her feet and legs four or five weeks before and had become so marked that it extended upward to the lower part of the chest. On hurried examination (the woman was quite dyspneic and it was our intention to hospitalize her as soon as possible) these significant observations were made: Both lower extremities and the abdomen were enormously distended with edema; she was very uncomfortable because of the shortness of breath; her facial expression was typical of that of patients with advanced heart disease who have become decompensated. The cardiovascular system showed a pulse rate of from 90 to 100, which was bounding and full with a moderate sclerosis of the radials. The blood pressure was 190 systolic and 110 diastolic, and every valve was apparently incompetent. There was a great deal of hypertrophy and dilatation. Moist rales were present in the base of both lungs. There was so much edema of the abdominal wall that it was impossible to make out anything definite on palpation of the abdomen. The impression was that the condition was hypertensive heart disease which had become decompensated because of the added load of the pregnancy. She was hospitalized immediately and orders were left for the administration of morphine for rest and four 1½ grain (1 Gm.)

tablets of powdered leaf digitalis every six hours for twenty-four hours. Her weight was about 180 pounds (81.6 Kg.).

At about 5:30 p. m. we were informed that the patient had just had a severe heart attack. We reached her bedside in about fifteen minutes and found her unconscious, pulseless, with frothy fluid exuding from the nose and mouth. She undoubtedly had a severe acute failure on the left side. The pupils had already become dilated and respiration was only in gasps. Epinephrine, caffeine and pyridine betacarboxylic acid diethylamide (coramine) were administered without effect. We did everything possible for the next ten minutes, including artificial respiration. Dr. Carrithers was present and when her heart sounds became inaudible one of us (D. A. H.) took the scalpel and immediately opened the abdomen and uterus. A boy was extracted with a weak cord pulsation of about 60 per minute. After two or three minutes, during which time efforts were being made to resuscitate him, there was a weak cry, and he was in fair condition. I turned to inspect the abdominal wound and noticed the arm of another fetus in the uterus, which was full of amniotic fluid. A baby girl was quickly extracted and found to have a cord pulsation of between 30 and 40 per minute and very weak. This was approximately seven or eight minutes from the time the woman was pronounced dead and about thirty-five minutes from the beginning of the patient's acute attack, during which time she had been practically pulseless. After about forty-five minutes' work at resuscitation, during which time alpha-lobeline and caffeine with sodium benzoate were administered in large doses and prolonged mouth to mouth insufflation was instituted, the girl uttered a weak cry. The twins were placed in the incubator for about eighteen hours, after which time they were in fair condition. After a stormy period of about a week the little girl's condition became fairly good. The birth weight of the boy was 4 pounds 4 ounces (1,928 Gm.) and the girl's was 5 pounds 6 ounces (2,439 Gm.). At the present time both are perfectly normal infants and in good condition. The boy weighs 13 pounds 8 ounces (6,123 Gm.) and the girl weighs 12 pounds 10 ounces (5,728 Gm.).

112 North Sixth Street.

TUMOR IN ABDOMINAL WALL FROM A PINE NEEDLE SWALLOWED SEVERAL YEARS PREVIOUSLY

HARRY L. SMITH, M.D., AND JAMES T. PRIESTLEY, M.D.
ROCHESTER, MINN.

A white man, aged 40, whose family history was not significant, underwent a tonsillectomy in 1925, a stone was removed from his left kidney in 1926, and he had a sore throat in 1935; otherwise the medical history was essentially negative. In July 1937 he noticed slight soreness in the right groin. This remained for a few days and then disappeared. In August he again noticed a slight soreness in the same region. He applied an ice bag and the soreness disappeared in a few days. In November 1937, soreness and stiffness developed in the right lower quadrant of the abdomen. Since it came on a day after playing baseball, the patient attributed the pain to this. At this time he first noticed a hard lump just above the crest of the ilium. Because of this lump the patient then consulted a physician and several roentgenograms were taken. These were negative. The patient came to the clinic Jan. 13, 1938.

On admission the patient was well developed and well nourished and did not appear ill. Physical and laboratory examinations gave essentially negative results except for a hard mass in the right lower abdominal quadrant. Just above and medial and apparently fixed to the iliac crest was a stony mass about 6 cm. in diameter. This mass felt like a bony tumor; it was not tender. Many roentgenograms were taken but none revealed any involvement of bone. It was first believed that this tumor was a chondroma, since chondromas often do not produce a roentgenologic shadow.

At exploratory operation, January 19, a hard fixed mass was found just medial to the right anterior-superior spine of the ilium. The tumor was exposed by cutting through the external

11. Rosin, I. R.: A Case of Postmortem Cesarean Section, with Delivery of the Living Child, *Lancet* 1:820 (April 16) 1927.

12. Holden, R. T., Jr.: Postmortem Cesarean Section Report with a Successful Operation, *M. Ann. District of Columbia* 1:63-64 (March) 1932.

13. De Lee, J. B.: *Textbook of Obstetrics*, Chicago, Year Book Publishers, Inc.

From the Section on Medicine (Dr. Smith) and the Division of Surgery (Dr. Priestley), the Mayo Clinic.

oblique muscle. While hard, the tumor appeared to be inflammatory, which fact was confirmed by the pathologist. Deeper dissection into the center of the mass exposed an old pine needle, which measured about 4 cm. in length. This was removed and several small sinus tracts surrounding the pine needle were curetted. The wound was left entirely open, packed with iodoform gauze and permitted to heal by granulation. Convalescence was uneventful.

After operation, additional information was obtained. The patient was found to have worked for a lumber company from 1926 to 1929. During this period he was out in the woods most of the time. On his daily horseback rides through the woods he would often pick pine needles from the trees and, placing one in his mouth, chew on it. This had become quite a habit. He did not, however, remember having swallowed a pine needle.

Evidently this patient had swallowed a pine needle some time between the years of 1926 and 1929 and it had worked through the intestinal wall without producing any noticeable symptoms. There were no symptoms until a few months prior to operation, when an inflammatory reaction developed around the needle, but even then the symptoms consisted only of slight soreness in the side. It was because of this soreness that the mass was finally discovered.

THE ACOUSTICS OF THE STETHOSCOPE

DOUGLAS MACFARLAN, M.D., Philadelphia

The considerable number of variously designed stethoscopes on the market would lead one to judge not only that there is much difference in taste but that there is probably a difference in quality. More than this, it would seem important for one to know something about the variability introduced by an instrument for the examining of acoustics and something about the sounds to which one is listening.

TABLE 1.—Normal Heart Sounds (After Williams and Dodge)
Frequency Distribution in Energy Percentage

Frequency	Energy
50-60	56%
60-70	28%
70-80	10%
80-90	4%
90-100	2½%
100-110	1%

Above these frequencies the intensities are negligible.
Low pitched heart murmurs contain as their characteristics frequencies below 400 cycles.
High pitched murmurs range from 120 cycles to 660 cycles.
Presystolic murmurs lie for the most part below 140 cycles but may contain characteristics up to 400 cycles (Cabot and Williams).
Diastolic and systolic murmurs range chiefly between 120 and 660, occasionally ascending to 1,000 cycles.
The pericardial rub contains frequencies between 140 and 660 cycles.
Rales lie between 120 and 1,000.
Amphoric breathing ranges between 240 and 660 cycles.
Bronchial breathing ranges between 240 and 1,000 cycles.

The intensities of the sounds of the heart and the chest¹ are very small, not averaging, for the frequencies they possess, more than 10 decibels in their greatest exaggerations. The frequency characteristics of these various sounds are contained in a very narrow band between 60 and 1,000 cycles. In other words, whereas the normal hearing range lies roughly between 64 and 26,000 cycles, for listening to chests and hearts one is required to have good hearing only in the zone 64-1,000. Yet a small hearing loss in this restricted area will make the usual heart and chest sounds inaudible.

One factor of much importance in auscultation is a quiet examining room, for it requires only a small amount of outside noise to dampen out the sounds one wishes to hear.

It is also important to remember that hearing is greatly reduced by any (even slightly) increased pressure of the air column on the drum. Thus, tightly fitting ear tips held in place by strong springs will cut down efficiency.

It is apparent that, the larger the area of the stethoscope piece in contact with the chest, the greater the amount of sound collected; thus the diaphragm types when large collect more sound than the smaller "bell" types. Yet the latter have an advantage in more closely localizing the spot of greatest loudness. It will perhaps be a surprise to learn that the

TABLE 2.—Frequency Response of Nine Different Stethoscopes in Terms of Decibel Gain or Loss in Loudness

Frequency	128	256	512	1,024
No. 1 diaphragm type.....	-10	-5	0	-5
No. 2 diaphragm type.....	+10	-5	-10	-7
No. 3 diaphragm type.....	0	0	-5	-10
No. 4 Bell type.....	0	0	+2	-3
No. 5 Bell type.....	+5	+10	-5	-10
No. 6 Bell type.....	+5	0	-5	-5
No. 7 Bell type.....	-25	-15	-25	-20
No. 8 Bell type.....	0	0	-5	-5
No. 9 Bell type.....	-5	-5	-10	-5

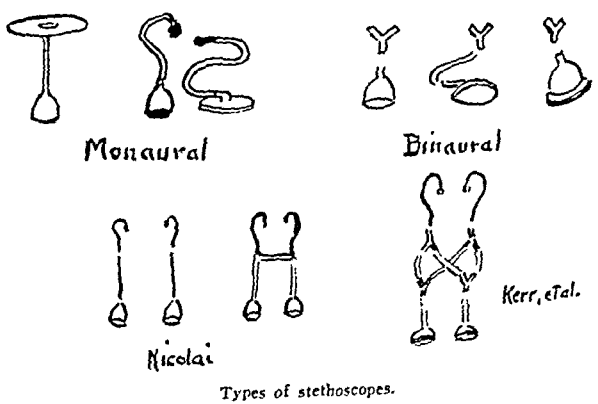
unaided ear operates at greater efficiency than the ear aided by any type of stethoscope. A "frequency hearing run" of nine stethoscopes bought in the open market showed that for the most part sounds were not magnified but reduced in audibility. Table 2 shows in decibels the gain (+) or reduction (-) in hearing of these middle range pitches. It might appear from this that the best policy would be to buy the least expensive stethoscope one can find and then not use it. In this connection it is interesting to recall that David Livingstone was nearly "plucked" for his medical degree because he considered the stethoscope of doubtful use. But localization of sound is often of great importance, and the small bell stethoscope can best do this.

The most careful localization, however, can be done by using the phase difference phenomenon first expounded by Nicolai and later by English investigators, and in this country by Halverson, Stewart, Bunch and Seashore.² Such studies were developed by the war time necessity of submarine detection. In 1937 Kerr, Bassett, Goldman and Althausen of the University of California developed the idea in a double stethoscope, the symballophone.³

In using this method of localization it is necessary that the examiner hear equally well in the two ears. Very small differences in intensity can be detected.

QUALITY

No instrument can improve on the unaided ear against the chest to appreciate the subtle qualities of the sounds of the heart and the chest. The examiner's "opposite" ear must, of



course, be stopped up. Unfortunately, the configuration of the chest makes it difficult for the unaided ear to localize sound in small areas.

Conduction of sound in the chest depends on the factors of flesh and bone. An adipose chest wall or extensive fatty breasts will surely absorb much of the sound. The stethoscope, fol-

1. Cabot, R. C., and Dodge, H. F.: Frequency Characteristic of Heart and Lung Sounds, J. A. M. A. 84:1793 (June 13) 1925. Williams, H. B., and Dodge, H. F.: Analysis of Heart Sounds, Arch. Int. Med. 38:685-693 (Dec.) 1926.
2. Halverson, Stewart, Bunch and Seashore: Iowa University Studies, 1922.
3. The symballophone was presented in the Scientific Exhibit of the American Medical Association in Atlantic City, N. J., in June 1937.

lowing along the prominence of the ribs, will often be misleading as to the direction of transmission of sound.

For those physicians with impaired hearing, the advent of the crystal microphone has made it possible for them to feel that auscultation, with all its importance, is not in the discard. This type of microphone is extremely free of distortion.

Amplification, however, is neither practical, nor desirable, nor is it needed for the physician with normal hearing.

1805 Chestnut Street.

OXYGEN SATURATION OF ARTERIAL BLOOD IN THE CYANOSIS FROM SULFANILAMIDE

FREDERICK H. KING, M.D., AND ALAN LESLIE, M.D., WITH THE TECHNICAL ASSISTANCE OF GRACE BYRNE, NEW YORK

A majority of the patients to whom sulfanilamide is administered in large doses show cyanosis in varying degree. This has been attributed by various authors to decreased oxygen saturation¹ methemoglobinemia² and sulfhemoglobinemia.³ Although the latter two may occur in some cases, they do not assume a principal role in most instances, as has been demonstrated by Marshall and Walzl.⁴

We have investigated the oxygen saturation of the arterial blood in eight patients to whom sulfanilamide was administered in fairly large doses. In each instance there was a grayish blue cyanosis during the administration of the drug. In no instances were there any clinical manifestations of anoxemia. Blood specimens, withdrawn for analysis, were uniformly dark.

Blood was drawn from the brachial artery under anaerobic conditions and collected under oil, following which the determinations were promptly made. The oxygen content and capacity of the blood were determined by the methods of Van Slyke and Neil.

unsaturation) of the arterial blood does not play a significant role in the cyanosis from sulfanilamide. This is in keeping with the clinical observation² that the administration of oxygen in these cases fails to influence the cyanosis.

111 East Seventy-Fifth Street.

AN OUTBREAK OF JAUNDICE IN DETROIT PRELIMINARY REPORT

JOSEPH G. MOLNER, M.D., AND JOSEPH A. KASPER, M.D.
DETROIT

Following the recognition of a disease characterized by fever and jaundice by Weil in 1886, series of similar cases were reported by other investigators. Inada and Ido and their associates¹ in 1914 described the same malady as it occurred in Japan, and after careful investigation these workers concluded that the etiologic agent was a spirochete. Other cases were reported by workers from England, Germany, France and the Netherlands. Particular attention in most of these reports is directed to the significantly high incidence of the disease among soldiers in trenches.

Noguchi² in 1917 described the organism isolated in cases of jaundice in greater detail. He classified it a *Leptospira icterohaemorrhagiae*. In a later publication of his studies he reported finding virulent strains of *Leptospira* in carcasses of rats trapped in New York. These organisms were found to be pathogenic to guinea pigs and agreed in immunity and agglutination reactions with the Japanese strain isolated by Inada and Ido and their associates. Repeated isolations of similar strains of *Leptospira* from rats were reported by Jobling and Eggstein,³ Langworthy and Moore⁴ and others.

Weil's disease is most generally encountered as a sporadic disease, occurring primarily in localities that are heavily infested

Observations in Eight Cases

Case	Diagnosis	Date	Cyanosis	Total Dosage of Sulfanilamide to Date	Hemoglobin, per Cent (Sahli)	Oxygen Content, Volumes per Cent	Oxygen Capacity, Volumes per Cent	Oxygen Saturation, per Cent
1	Acute infectious arthritis	2/9/38 2/14/38	+++ +	19.3 Gm., 2/6 to 2/9 20 Gm. discontinued 2/9	72 65	14.8 13.3	15.9 14.8	93.1 89.8
2	Mitral stenosis	2/16/38	++	10 Gm., 2/14 to 2/16	75	14.5	16.2	89.5
3	Postabortal sepsis, diabetes mellitus	2/18/38	++	7 Gm., 2/17 to 2/18	60	10.7	11.3	94.7
4	Acute infectious arthritis	2/24/38 2/25/38	+++ ++++	13 Gm., 2/22 to 2/24 18 Gm., 2/22 to 2/25	82 ..	14.7 13.2	16.2 14.9	91.0 88.2
5	Lobar pneumonia	2/26/38 2/28/38	± ++	..... 13 Gm., 2/26 to 2/28	87 85	18.7 14.9	19.5 16.8	96.1 88.7
6	Ureteral calculus, broncho-pneumonia, left lower lobe	3/2/38	++	12 Gm., 2/28 to 3/2	68	12.3	14.3	86.0
7	Hemolytic streptococcus meningitis	3/23/38	++++	30.64 Gm. and pron-tosil, 20 cc., 3/17 to 3/23	70	10.4	11.4	91.2
8	Hemolytic streptococcus meningitis	3/24/38	+++	37.24 Gm. and pron-tosil, 240 cc., 3/16 to 3/24	62	10.8	11.9	90.8

The accompanying table discloses the fact that in no instance was the oxygen saturation of the arterial blood at a point low enough to explain the relatively marked cyanosis. In cases 4 and 7 the cyanosis was the most marked in this series and the initial determinations revealed oxygen saturations of 91 per cent and 91.2 per cent. Repeated determinations in several instances showed a fall in both oxygen content and capacity. The factors responsible for the decreases cannot be evaluated from so small a group of cases. The percentage of oxygen saturation, however, never fell to a point to warrant considering it a significant causative factor in the cyanosis.

The observations made on this group of eight patients would tend to indicate that diminished oxygen saturation (increased

with rats. Another common environmental association with this disease includes moist or muddy conditions. Persons working under such conditions as, for example, miners, sewer workers, fish cutters, bargemen, butchers and garbage handlers are most prone to acquire the disease. These environmental conditions may account for the greater incidence among men.

Outbreaks of jaundice in civil populations have been reported in England⁵ and in the United States.⁶ The distinguishing feature of such attacks, as compared to Weil's disease, was the apparent insidious nature of their onset and the tendency to

From the Department of Health.

1. Inada, R.; Ido, Y.; Hoki, R., and Ito, H.: *J. Exper. Med.* 23: 377 (March) 1916.
2. Noguchi, Hideyo: *J. Exper. Med.* 25: 755 (May) 1917; 30: 95 (Aug.) 1919.

3. Jobling, J. W., and Eggstein, A. A.: *The Wild Rats of the Southern States as Carriers of Spirochaeta Icterohaemorrhagiae*, *J. A. M. A.* 69: 1787 (Nov. 24) 1917.
4. Langworthy, V., and Moore, A. C.: *J. Infect. Dis.* 41: 70 (July) 1927.

5. Bates, Ralph: *Brit. M. J.* 1: 521 (March 19) 1936. Pickles, W. N.: *Brit. J. Child. Dis.* 33: 192 (July-Sept.) 1936. Linsey, A. A.: *Brit. M. J.* 1: 703 (April 3) 1937.
6. Willett, J. C.; Sigoloff, E., and Pfau, C. L.: *An Institutional Outbreak of Epidemic Jaundice*, *J. A. M. A.* 106: 1644 (May 9) 1936.

Blumer, George: *Infectious Jaundice in the United States*, *ibid.* 81: 353 (Aug. 4) 1923.

Aided by a grant from the Linde Air Products Company.

From the Medical Services and the Laboratories, the Mount Sinai Hospital.

1. Mull, J. W., and Smith, J. T.: *Effect of Sulfanilamide on the Oxygen Capacity of the Blood*, *J. A. M. A.* 110: 439-440 (Feb. 5) 1938.
2. Paton, J. P. J., and Eaton, J. C.: *Lancet* 1: 1159-1162 (May 15) 1937.

3. Discombe, G.: *Lancet* 1: 626-627 (March 13) 1937. Frost, L. D. B.: *Lancet* 1: 510 (Feb. 27) 1937. Colebrook, Leonard, and Kenny, Meave: *Lancet* 1: 1279-1286 (June 6) 1936.

4. Marshall, E. K., and Walzl, L. M.: *Bull. Johns Hopkins Hosp.* 61: 140 (Aug.) 1937.

occur in outbreaks. Epidemic jaundice primarily affects children and occurs more generally during the fall and early winter months. Its clinical course usually extends over a period of about two weeks. Moderate hyperpyrexia is usually noted, and seldom does the illness terminate in death. The etiology of this type of jaundice is unknown, although it has been postulated by some investigators that a strain of spirochetes of low virulence, or possibly a filtrable virus, may be the causative agent.

In the early part of January 1938 our attention was called to a sudden increase in the incidence of jaundice among school children. A group of five patients were suffering from a moderate form of this disease. In rapid succession, and in the same locality, our attention was called to twelve additional cases, one of which was fatal. By investigation of the current cases and by retrospective inquiry, which included the period extending back to November 1937, we have been able to uncover a total of forty cases. One of the patients was a boy aged 3, another was a youth aged 16, and still another was a man. The remaining thirty-seven cases were distributed in the age group from 5 to 15 years.

There was a very definite aggregation of cases noted in this group. The majority of the cases were reported from the west side of Detroit. The localities primarily involved were the far north, far south and central areas of the west side of Detroit. Twelve cases were reported from one elementary school. Multiple cases have occurred in five families.

The condition apparently is infectious in nature, and person to person contact may play an important role in the transmission of the disease. In 60 per cent of instances contact with other cases was established.

Two outbreaks of jaundice in kennels have been investigated. Curiously, both of these outbreaks occurred in the late fall of 1937 and in localities where, at the present time, human cases are showing evidences of aggregation. In both of the kennel outbreaks infestation with rats was noticed by the proprietors. The outbreak of jaundice among the dogs affected animals under 6 months of age. The case fatality among these was 50 per cent. One of the kennel outbreaks was superficially investigated, and liver scrapings from two of the dead animals revealed the presence of organisms having the structure of spirochetes. These observations, however, were not followed by inoculations of guinea pigs.

In another instance, again in the section of the city in which human cases show evidences of aggregation, there is the history of a fox terrier having been bitten by a rat. The history was definite and verified. The dog, three days after injury, became ill with nausea, vomiting and loss of appetite. On the fifth day of illness frank jaundice, clay-colored stools and dark urine were noted by the owner. The dog failed to take food from the fourth day of onset of his illness and died on the eighth day of the disease. The observations at autopsy, performed two weeks after death, were petechial hemorrhages throughout the mesentery, liver and lungs, together with definite signs of jaundice. These observations, however, were obscured by autolytic changes that had developed.

Our investigation of the fatal case—the 3 year old boy—shows that the disease was ushered in with a chilly sensation but no definite chills, which was followed by fever. The temperature ranged from 99.6 to 103 F. Concurrently with the chilly sensation and temperature elevation nausea, vomiting, lethargy and loss of appetite developed. On the fourth day of illness coryza developed, at which time the patient was seen by a physician.⁷ On the sixth day highly colored urine was noted, and on the seventh day frank jaundice developed. Within three days after the onset of the jaundice apparent recession of the symptoms was noted. Convalescence continued for five days, when it was interrupted by an acute exacerbation evidenced by the recurrence of the chilly sensation and the rise in temperature. Clinically the child became more acutely ill and died on the twenty-first day of his illness, after lapsing into terminal coma.

Antemortem and postmortem specimens of blood taken from the child revealed spirochetes on dark field examination. Liver scrapings were also found to contain spirochetes. Samples of

blood and urine inoculated into guinea pigs failed to produce jaundice in these animals. The patient's blood serum showed agglutination of *Leptospira icterohaemorrhagiae* in a dilution of 1:30,000, which was reported and considered diagnostic by the National Institute of Health.

Probably one of the most intriguing circumstances in the course of our investigation arose in the follow-up of the foregoing case. The first case of jaundice in a dog was encountered in a Scotch terrier owned by this family. The dog became ill about fourteen days prior to the onset of the child's illness. The dog's illness was characterized by nausea, vomiting, listlessness and loss of appetite. Within two days clay colored stools and highly colored urine were noted. A veterinarian was consulted and the condition was diagnosed as jaundice. Although the animal's condition was considered hopeless, convalescence was surprisingly uneventful and the dog was returned to the owner in ten days. It was within the following two days that the child in this family became ill.

SUMMARY

An outbreak of jaundice has been noted among children and adults in Detroit.

The causative agent in this outbreak is as yet undetermined. Agglutination of *Leptospira icterohaemorrhagiae* in a titer of 1:30,000 was found in one case, which terminated fatally.

Jaundice among dogs was observed. In one instance the disease in the dog was followed by a similar malady in the owner.

Investigation reveals that contact of dogs with rats may be followed by jaundice in the former. Of six young dogs in which jaundice developed three died of the disease.

The observations here reported warrant further investigations relative to *Leptospira icterohaemorrhagiae* as the cause of jaundice in Detroit. Virus as a possible etiologic agent, as suggested by Bates,⁶ might also bear investigation.

3919 John R. Street.

A FINGER SPLINT FOR EXTENSION OR FLEXION

NED SHNAYERSON, M.D., NEW YORK

This instrument is a device presented to obviate the difficulties one meets in the treatment of the "stiff finger."

When the patient presents a loss of function of the metacarpophalangeal or interphalangeal joint not due to ankylosis, one tries to overcome the fixed position of flexion or extension by

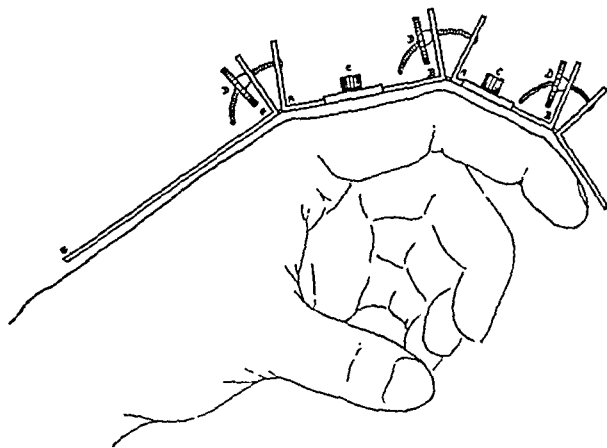


Fig. 1.—Splint for extension or flexion of finger.

a constant force in the direction desired. Many devices have been utilized to accomplish this, such as a plaster cast with overhanging surface so that felt pads may be wedged in between this surface and the fingers, and elastic bands applied to the end of the finger or finger nail. All these devices are usually cumbersome and apply an inconstant and inefficient force.

The device here presented is a metal splint which has a corresponding joint for each joint in the finger. In figure 1 the middle two segments A-B correspond to the two proximal

7. This case was reported to the department of health by Dr. Edgar E. Martner.

segments of the finger and can be lengthened or shortened, according to the patient's finger length, by a lock C. When the splint is fixed in place, the affected joint or joints can be flexed or extended into a constantly increasing or decreasing angle by turning the turn-screw D. The patient does this manipulation himself, so that the increase of flexion or extension is constantly applied and the angle desired more quickly

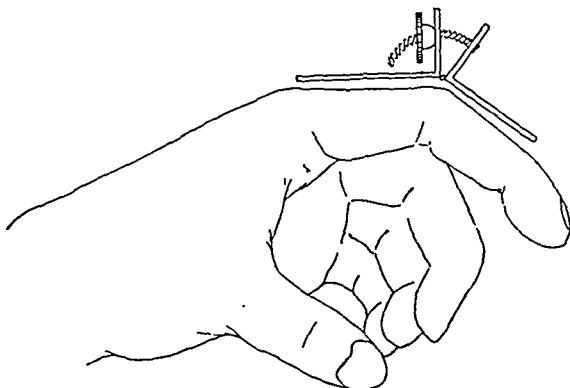


Fig. 2.—Use of part of splint when only one joint is affected.

obtained. This angle is held in position without any return to the old position for as long a period as is desired. The splint is applied by encasing the segment E-F in a plaster bandage around the hand. This will hold the instrument in a rigidly correct line. The middle segments are adjusted to the proper lengths and some padding is placed between the finger and the under surface of the splint. A turn of narrow adhesive plaster around the segments of the finger and the splint will complete the application of the instrument. If only one joint is affected, the splint can be taken apart and only the corresponding part applied to the affected joint (fig. 2).

Mr. Frank Smart cooperated and contributed the mechanical ingenuity required in overcoming the difficulties in making the joints of this device pass through a 90 degree span.

45 East Sixty-Second Street.

A CASE OF POLYCYTHAEMIA VERA: THE FAMILIAL INCIDENCE OF HEMOPHILIA AND TREATMENT WITH PHENYLHYDRAZINE

SIDNEY M. GLASSER, M.D., HEMPSTEAD, N. Y.

In reviewing the literature pertinent to polycythemia, one sees no mention of the etiologic aspect of this disease. There is free mention of the pathology, therapy and sequelae, but no observations cast any light on the cause of this rare condition. I am offering no theory as to the mechanism which results in erythremia, but it is of more than passing interest to note the appearance of two rare hematologic diseases in the same family.

REPORT OF CASE

History.—B. G., a white woman, aged 60, a widow, a member of an old New England family, first seen in November 1935. For two months the patient complained of nausea, vomiting, weakness, dizziness, a throbbing sensation throughout the head, discoloration of various parts of the body, neuralgic pains of the muscles and joints, and a marked distention of the abdomen.

The past history revealed the average childhood diseases, with menstruation commencing at 14 years and the menopause at 40, with no menorrhagia or metrorrhagia at any time. Two female children were delivered normally with no severe post-partum hemorrhage; there had been no surgical operations at any time except extraction of all the patient's teeth in 1923, which caused oozing for several days. The patient's mother, as well as herself, bled more than the average when they cut their fingers doing housework.

About seventeen years before admission the patient noticed a lump in the left upper abdominal region, concurrent with

purpuric spots over the body, cyanosis and frequent bilious spells. These attacks (occurring about five times a year) would last for about one week, incapacitating her, and appeared to be independent of menstruation.

In 1927 the patient had an episode similar to the present illness and was confined to bed for three months, at which time a diagnosis of polycythemia vera was made; at that time she was given a monthly superficial x-ray treatment for the spleen for seven months. In 1930 her attending physician commenced monthly phlebotomies of an average of 25 ounces (750 cc.) for about one year. Since then she had kept growing progressively worse and for the last five years had spent the major part of the time in bed.

Figure 1 shows the incidence of hemophilia in the patient's family; the youngest sister died at the age of 35 of hemorrhages following a laparotomy, but, owing to inadequate records, neither the diagnosis nor the cause of the hemorrhages could be ascertained. All of the patient's cousins and nieces are in good health and free from any bleeding tendencies. The patient's husband died at the age of 65 from rectal carcinoma. Death certificates extending back thirty years failed to reveal any hemorrhagic tendencies in the patient's grandparents.

Physical Examination.—The patient was extremely cyanotic, weighing 92 pounds (41.7 Kg.), and appeared to be about 75 years old; she was roused with considerable difficulty. The entire face was cyanotic; the cheeks were very prominent; the orbital fossae were sunken; ophthalmoscopic examination showed marked distention of the retinal veins with peculiar bluish tinting of the retina; all the teeth were absent; the thoracic cage was symmetric, with marked prominence of the intercostal spaces. There was visible a pulsation in the region of the fifth interspace just beyond the midclavicular line. The heart was enlarged about 3 cm. beyond the midclavicular line in this interspace. There was an apical systolic murmur transmitted toward the left axilla. Blood pressure was 170 systolic, 100 diastolic. The liver was palpable, four fingerbreadths below the right costal margin; it was not tender and was smooth. The abdomen was full and was distended with considerable tympany. The spleen was mapped out, having its distal border slightly below the left anterior superior spine with its medial border crossing the midumbilical line. The spleen was smooth throughout and was moderately tender. No other viscera were palpable; the extremities were emaciated, and no abnormal

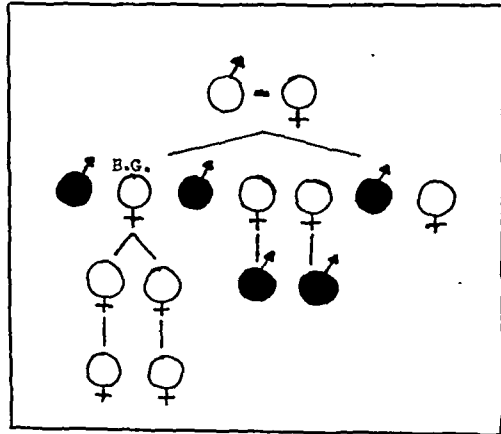


Fig. 1.—Familial incidence of hemophilic deaths in B. G.'s family as indicated by the black figures.

neurologic manifestations were observed. Examination of the urine showed the specific gravity 1.014, with a faint trace of albumin.

Therapy.—Figure 2 shows the hematologic course of the disease under the influence of phenylhydrazine hydrochloride therapy, as recommended by Owen.¹ Levi² cautions against the use of this drug, since it may predispose to cirrhosis of the liver, yet I felt that if the patient were not treated she would

1. Owen, Trevor: The Treatment of Erythremia with Phenylhydrazine, J. A. M. A. 85: 2027 (Dec. 26) 1925.
2. Levi, E.: Erythremia, Ztschr. f. klin. Med. 100: 777, 1924.

die. Furthermore, Ryle³ is of the opinion that, since cirrhosis develops in the majority of untreated patients with erythremia if they escape other complications, it seems logical to conclude that their own inadequate method of destruction of blood is not necessarily successful.

Course.—The remission of the blood changes closely parallels the subjective symptoms. Blood pressure taken two months after the beginning of therapy fell to 155 systolic, 90 diastolic, and when last taken was 135/80. At present the patient is carrying on her full household duties and is assisting in chores. The last time she was seen the patient was doing a commendable job of papering the wall of her bedroom.

COMMENT

It would have been very illuminating to know whether this woman is a transmitter of hemophilia, but no male progeny have been borne to either of her daughters or to herself. It is to be expected that a male child would probably have shown

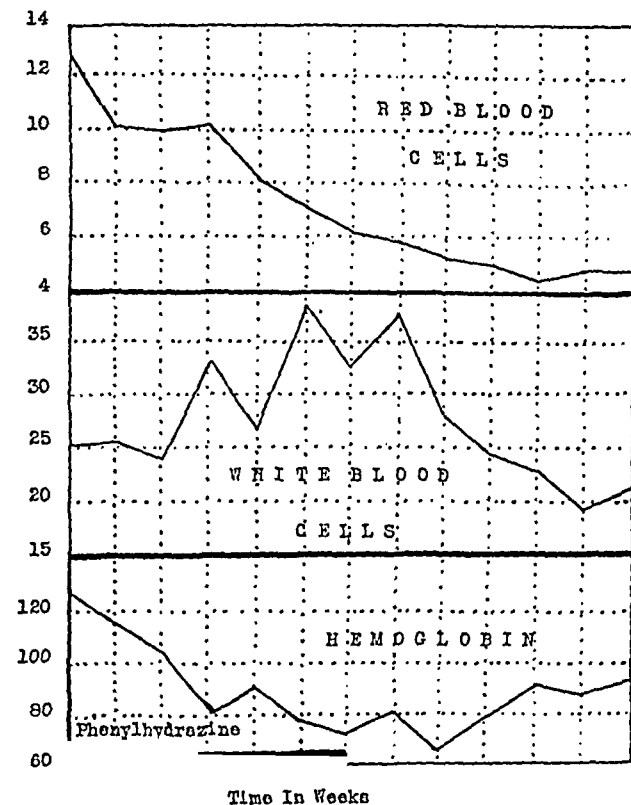


Fig. 2.—Hematologic response to phenylhydrazine therapy.

evidence of hemophilia. The hematologic manifestations in this case are far more severe than those usually found in this condition. Howell⁴ states that when the red blood cells reach a level of 13,000,000 per cubic millimeter the viscosity of the blood will be such as to cause spontaneous thromboses.

CONCLUSION

In the case of severe polycythaemia vera presented here in which all male members of the patient's family died of hemophilia, a dramatic response was shown to phenylhydrazine hydrochloride therapy.

3. Ryle, J. A.: Erythremia, *Guy's Hosp. Rep.* 76:21 (Jan.) 1926.
4. Howell, W. H.: *Textbook of Physiology*, ed. 4, Philadelphia, W. B. Saunders Company, 1912, p. 412.

The Spirit of Medicine.—Descartes, in the sixteenth century, once said, "If ever the human race is raised to its highest practicable level intellectually, morally, and physically, the science of medicine will perform that service." I would substitute the word spirit for science, for it is, after all, the spirit of medicine that has sustained us.—Borzell, Francis F.: *The Medical Profession and the Social Worker, Pennsylvania M. J.* 41:683 (May) 1938.

Special Article

VITAMIN A

PHYSIOLOGY AND PATHOLOGY

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This article and others recently published or to be published comprise a new series on the present status of our knowledge of the vitamins. They have been prepared under the general auspices of the Council on Pharmacy and Chemistry and the Council on Foods. The opinions expressed are those of the authors and not necessarily the opinions of either council. Reprints are not available but the articles will be published later in book form.—Ed.

Vitamin A is an essential part of the biochemical machinery of all vertebrates. It is a derivative of carotenoid pigments from plants. As far as is known, no vertebrate can synthesize carotenoids *de novo*.¹ Probably all higher animals can convert certain carotenoids to vitamin A. The pathologic consequences of the deficiency are similar in man, monkeys, cattle, swine, dogs, rabbits, guinea pigs, rats, mice and fowls.² For these and other reasons, facts about vitamin A learned from animal experiments are without doubt applicable to man.

The required brevity of this article will not permit mention of many papers and excludes critical discussions. The selection and evaluation of the material presented are expressions of our judgment. Readers wishing more references are referred to a monograph by Browning,³ to a review by Robertson⁴ and to the recent volumes of the *Annual Review of Biochemistry*.⁵

PHYSIOLOGY

Vitamin A and Carotenoids.—Fats, carbohydrates and proteins constitute the bulk of the physical basis of living matter and serve as the principal source of energy. Vitamins have to do with those biochemical mechanisms which are concerned with the transformation of food and energy into the many forms of activities essential to normally functioning organisms. Quantitatively the requirement for vitamin A is strikingly small; at most only a few milligrams daily are necessary for the largest mammals.⁶

Carotenoid pigments,⁷ yellow and red compounds, are widely distributed in the plant world from bacteria and diatoms to garden fruits and vegetables. Four substances, out of this large group, are known at present from which animals can form vitamin A. These (provitamins) have been named alpha, beta and gamma

From the Department of Pathology, Harvard Medical School, and Harvard Dental School.

1. Wald, George: Carotinoids and the Visual Cycle, *J. Gen. Physiol.* 19:351 (Nov.) 1935.

2. Wolbach, S. B.: The Pathologic Changes Resulting from Vitamin Deficiency, *J. A. M. A.* 108:7 (Jan. 2) 1937.

3. Browning, E.: The Vitamins, Monograph 1 of the Pickett-Thomson Research Laboratory, London, Baillière, Tindall & Cox, 1931.

4. Robertson, E. C.: Recent Work on the Tissue Changes in Vitamin A Deficiency, *Am. J. M. Sc.* 192:409 (Sept.) 1936.

5. McCollum, E. V.: The Fat Soluble Vitamins, in *Annual Review of Biochemistry*, Stanford University, Calif., Stanford University Press 5:379, 1936. Sherman, Caroline C., and Sherman, H. C.: Vitamins, *ibid.* 6:355, 1937. Harris, footnotes 42, 51, 52 and 93.

6. Guilbert, H. R., and Hart, G. H.: Minimum Vitamin A Requirements with Particular Reference to Cattle, *J. Nutrition* 10:409 (Oct.) 1935.

7. Karrer, Paul: Nutritionally Important Natural Pigments, *Helvet. chim. acta* 19:E33-E48, 1936.

carotene and kryptoxanthin. (A preparation of a carotenoid, echinenone, from the sex glands of sea urchins, has been found active as a provitamin A.) The chemical nature of these substances has been discussed in a previous paper of this series.⁸ The term carotene will be used in this paper to represent the group of provitamins.

Carotene is obviously of great importance in the physiology of plants, though its exact function is unknown.⁹ It usually appears concurrently with active growth and function and seems to be closely associated with chlorophyll in assimilative activities. Etiolated shoots contain little carotene while green shoots contain much, a fact that suggests the influence of light in the formation of carotene as well as of chlorophyll. In general, the quantity of chlorophyll is an index of the carotene content of green plants. Carotene does not seem to be consumed by any plant activity carried on in the dark, nor is it lost when the chlorophyll disappears at the time of yellowing of leaves. It is, however, completely destroyed in dry dead leaves. Rapid drying by artificial heat of freshly cut alfalfa destroys enzymes in the plant which in field curing are responsible for extensive inactivation of provitamin A. This fact is important because the carotene of green leaves is brought indirectly into human nutrition through milk and eggs. In human nutrition a considerable part of the vitamin A value, or activity, is represented by carotene in green and yellow vegetables.¹⁰ Eggs, milk and butter are the usual sources of vitamin A but they also furnish some carotene, the proportions depending on the nutritional state of the hen and of the cow.

Except as a precursor of vitamin A, carotene as such is not known to be active in the animal economy. However, the problems of absorption, assimilation and storage of carotene and the relationship of carotene to the secretion of milk and the production of eggs must be considered in any discussion of the physiology of vitamin A.

Storage of Vitamin A in the Body.—Most animals have a remarkable capacity for the storage of vitamin A, illustrated by the fact that a rat may in a few days store enough vitamin A to supply its nutritional needs for several months.¹¹ Approximately 95 per cent of the total vitamin A in the body is present in the liver; small but detectable amounts appear in the lungs and the kidneys.¹² In times of low intake this store is used to supply physiologic needs. During a prolonged deficiency, the reserve is gradually depleted, normal cell functions are suspended and pathologic change develops. In the rat this storage, physiologically speaking, seems to be of two types. By excess feeding of concentrates, enough vitamin A may be accumulated in the liver theoretically to supply normal requirements for several years. However, this supply decreases at a reasonably rapid rate, beginning immediately after the concentrate is withheld, until it reaches a level at which a more conservative mechanism governs its use. A sufficient supply remains to nourish the animal for some time, even on a deficient diet. In

general, the reserves of the liver parallel the dietary intake but may represent only a fraction of the total consumption.¹³ In human beings, as in all animals studied, the vitamin A content is much lower in the liver at birth, irrespective of the diet of the mother, than in the liver of the normal adult.¹⁴ Accumulation of vitamin A in the liver tends to increase with age and is dependent on the character of the diet.

In the rat, neither general emaciation nor specific starvation due to other vitamin deficiencies has an influence on the hepatic reserves of vitamin A.¹⁵ Chronic diseases and infection seem to lead to slightly lowered vitamin A reserves, probably owing either to reduced intake of vitamin A or to decreased assimilation in the alimentary tract and increased metabolic demands.¹⁶ If one is to judge from autopsy material, nephritis and other diseases of the kidney and bladder definitely lower the vitamin A reserves. As yet the evaluation of data from such material is complicated by the uncertainty of what the normal reserves should be. Even assuming that the reserves are lower than normal, one has the added difficulty of deciding whether the lowering is cause or effect. One might expect greatly decreased reserves in association with severe disease of the liver, but existing data do not allow a conclusion on this point.

The vitamin A concentration of the liver of man,¹⁶ the rat,¹⁷ the cow⁶ and the rabbit when the subject is well nourished but not "flooded" with vitamin A is from 200 to 400 international units per gram, or from 10 to 20 mg. per hundred grams. The content of chicken liver seems to be much higher under these conditions of stable saturation.¹⁸

The problem of the storage of vitamin A in the livers of fish is interesting from both the commercial and the physiologic point of view.¹⁹ Certain species of fish, such as the halibut, yield liver oil of several hundred times the vitamin A potency of the average cod liver oil. As much as 1 per cent of the weight of halibut livers may be vitamin A. It is difficult to understand how this percentage could be stored vitamin derived from food only, especially since the diet of the halibut seems to be quite low in vitamin A. Of course the possibility exists that, although the concentration of the vitamin in the food is low, the large amount eaten, with gradual accumulation and unusual economy, in time leads to large reserves. That the reserves of the Newfoundland cod increase with age is evidence in support of this view. Phytoplankton, small marine algae, serve as the ultimate source of food for most sea animal life and have been found to contain biologically active carotene. The hypothesis is that these small plants are ingested by small crustacea or little fish, which in turn are eaten by larger fish, and so on, until the carotene of microscopic aquatic plant life becomes converted and stored as vitamin A in the livers of the larger fish. One of the points of weakness in this

13. Davies and Moore.¹¹ Baumann, Rüsing and Steenbock.²¹

14. Ellison, J. B., and Moore, Thomas: The Vitamin A Reserves of Human Infant and Child in Health and Disease, *Biochem. J.* **31**: 165 (Jan.) 1937. Dann.⁴⁹

15. Dann, W. J., and Moore, Thomas: The Effect of Vitamin B Deficiency upon the Vitamin A Reserves of the Rat, *Biochem. J.* **25**: 914 (March) 1931.

16. Moore, Thomas: The Vitamin A Reserve of the Adult Human Being in Health and Disease, *Biochem. J.* **31**: 155 (Jan.) 1937.

17. McCoord, A. B., and Luce-Clausen, Ethel M.: The Storage of Vitamin A in the Liver of the Rat, *J. Nutrition* **7**: 557 (May) 1934.

18. Cruickshank, Ethel M., and Moore, Thomas: The Effect of the Administration of Large Amounts of Vitamin A on the Vitamin A Content of the Hen's Egg, *Biochem. J.* **31**: 179 (Jan.) 1937. Guillebert, H. R., and Henshaw, W. R.: Vitamin A Storage in the Livers of Turkeys and Chickens, *J. Nutrition* **8**: 45 (July) 1934.

19. Sherman and Smith.⁸ Drummond.²¹ Harris.²²

8. Palmer, L. S.: The Chemistry of Vitamin A and Substances Having a Vitamin A Effect, *J. A. M. A.* **110**: 1748 (May 21) 1938.

9. Sherman, H. C., and Smith, S. L.: The Vitamins, American Chemical Society Monograph, New York, Chemical Catalog Company, Inc., 1931.

10. Sherman, H. C.: Chemistry of Food and Nutrition, New York, Macmillan Company, 1937.

11. Davies, A. W., and Moore, Thomas: The Influence of the Vitamin A Reserve on the Length of the Depletion Period in the Young Rat, *Biochem. J.* **31**: 172 (Jan.) 1937.

12. Moore, Thomas: The Distribution of Vitamin A in the Body of the Rat, *Biochem. J.* **25**: 275 (Jan.) 1931.

theory is the almost complete freedom from vitamin A or carotene of crustacea and copepods, the main articles of diet of the cod and the halibut. Crustacea and copepods do, however, contain pigments which originated from carotene and which, although not biologically active for a rat, may hypothetically serve as intermediates for synthesis of vitamin A by the fish. Another view could be that fish possess a power not present in mammals of synthesis from simple materials. This is pure speculation and has little experimental evidence to recommend it at present.

Absorption and Utilization.—Absorption and utilization of vitamin A and carotene are affected by the quantity administered and the manner of administration, the influence of other substances, the degree of saturation of the body and the general physiologic conditions of the alimentary tract.²⁰ The successful use of the rat test method for vitamin A activity is ample demonstration that amounts near the minimum requirements of either carotene or vitamin A are well utilized in this species. However, as the intake approaches a point which apparently exceeds the ability of the organism to absorb, convert and store, the efficiency decreases. Less than 10 per cent of an intake of vitamin A which is 2,000 times the necessary minimum is stored in the liver of the rat, while amounts which are not excessive but are satisfactory for optimum nutrition lead to 90 per cent storage.²¹ Absorption of vitamin A both in the rat and human being reaches a maximum in three to five hours after administration as shown by disappearance from the intestine and rise in the blood level.²² Under the same conditions carotene reaches a maximum level in the blood in from seven to eight hours. Fecal excretion accounts for only a small portion of the unutilized excess, the rest of which apparently finds other channels of excretion or is destroyed in the intestine or elsewhere in the body.²³ The other chief path of output, the kidney, seems to play no part in disposition of either vitamin A or its precursor unless the organism is literally flooded with vitamin A, in which case the vitamin is absorbed faster than it can be stored or destroyed and some "spilling" probably occurs into all body fluids.²⁴ This might be cited as evidence for the view that the organism possesses a mechanism for eliminating the unneeded excess by a destructive process, although delayed absorption undoubtedly results in some destruction in the intestine. The presence of bile²⁵ is not necessary but is helpful for absorption of vitamin A in the rat.

In general the assimilation of carotene is subject to great variations. Small quantities of carotene in oil are utilized under normal conditions to an extent of from 70 to 80 per cent, but it is generally agreed that larger quantities are not as well utilized as vitamin A.²⁶

This is especially true if the carotene is fed without being dissolved in oil or with low fat diets. A certain amount of normal absorption of fat seems necessary for transportation of carotene across the intestinal wall. On a fat-free diet rats assimilate only a small fraction of the same dose which is completely utilized when 10 per cent fat is included in the diet.²⁷ The importance of normal fat metabolism for absorption of carotene is further emphasized by the fact that in jaundice or choledochocolonostomized dogs the use of carotene is inhibited.²⁸ Some carotene is absorbed by rats with internal bile fistulas if bile acids are also fed. This fact suggests that bile acids directly or indirectly play a part in the transportation of carotene across the intestinal epithelium. One should bear in mind the possibility that a deficiency of vitamin A may arise in association with chronic diarrhea, obstruction of the biliary ducts, pancreatic dysfunction, celiac disease and other disorders involving prolonged faulty fat metabolism. In such cases absorption of carotene may be completely inhibited and assimilation of vitamin A greatly reduced.²⁹

The direct absorption of vitamin A and carotene into the thoracic duct was demonstrated in a case of chylothorax in which it was possible to drain the chyle for study.³⁰ Reasonably large quantities of vitamin A were returned almost quantitatively in the chyle, while the recovery of equivalent quantities of carotene was far short of quantitative. The carotene seemed to be chemically free, but the vitamin A appeared in a form which indicated that esterification had probably occurred in the intestine, a fact which may be significant in view of its natural high absorbability. Both substances were associated with the nondiffusible fatty phase, as was to be expected.

The simultaneous presence of liquid petrolatum shows little effect on the absorption of vitamin A but seriously diminishes the absorption of carotene by competing with the solvent action of natural fats.³¹ This emphasizes the desirability of giving liquid petrolatum separately from carotene-containing material.

During and for some time after certain infections, infants show diminished rates of absorption of carotene and vitamin A, which are not attributable to the accompanying fever, because elevated temperatures produced by other means have no such effect.³² The explanation of this interesting observation is not clear, but the phenomenon seems to be due to decreased intestinal absorption.

One may conclude that, under ordinary circumstances of moderate intake, carotene is slightly less efficient than vitamin A but that, when rapid storage of vitamin A is desired or when there is intestinal disturbance, products such as eggs, milk and fish liver oils are preferable to carotene.³³

Studies of the vitamin A and the carotene content of blood have been difficult because of the lack of satisfactory analytic methods for tissues of such low

20. Dutcher, R. A.; Harris, P. L.; Hartzler, E. R., and Guerrant, N. B.: The Assimilation of Carotene and Vitamin A in the Presence of Mineral Oils, *J. Nutrition* 8: 269 (Sept.) 1934. McCollum, E. Baumann, Riising and Steenbock.²¹ Clausen.²² Davies and Moore.²³ Rowntree.²⁴ Heymann.²⁵ Harris.²⁶

21. Baumann, C. A.; Riising, Blanche M., and Steenbock, Harry: The Absorption and Storage of Vitamin A in the Rat, *J. Biol. Chem.* 107: 705 (Dec.) 1934.

22. Clausen, S. W.: Limits of the Anti-Infective Value of Provitamin A (Carotene), *J. A. M. A.* 101: 1384 (Oct. 28) 1933.

23. Davies, A. W., and Moore, Thomas: The Distribution of Vitamin A in the Organs of the Normal and Hypervitaminotic Rat, *Biochem. J.* 28: 288 (Jan.) 1934. Baumann, Riising and Steenbock.²⁴ Heymann.²⁵

24. Heller, R., and Brunner, O.: Excretion of Vitamin A in Urine, *Klin. Wchnschr.* 15: 1106 (Aug. 1) 1936. Davies and Moore.²⁵ Heymann.²⁶

25. Greaves, J. D., and Schmidt, C. L. A.: On the Absorption and Utilization of Carotene and Vitamin A in Choledochocolonostomized Vitamin A Deficient Rats, *Am. J. Physiol.* 111: 492 (April) 1935.

26. Clausen.²⁷ Heymann.²⁸

27. Ahmad, Bashir: The Fate of Carotene After Absorption in the Animal Organism, *Biochem. J.* 25: 1195 (Aug.) 1931.

28. Greaves and Schmidt, footnotes 25 and 36.

29. Altschule, M. D.: Vitamin A Deficiency in Spite of Adequate Diet in Congenital Atresia of Bile Ducts and Jaundice, *Arch. Path.* 20: 845 (Dec.) 1935.

30. Drummond, J. C.; Bell, M. E., and Palmer, E. T.: Observations on the Absorption of Carotene and Vitamin A, *Brit. M. J.* 1: 1205 (June) 1935.

31. Rowntree, J. I.: The Effect of the Use of Mineral Oil upon the Absorption of Vitamin A, *J. Nutrition* 3: 345 (Jan.) 1931. Dutcher and others.³²

32. Heymann, Walter: Absorption of Carotene, *Am. J. Dis. Child.* 51: 273 (Feb.) 1936. Clausen.³³

concentrations.³³ The values for plasma carotenoid seem to be a measure of the difference between the rate of absorption from the intestine and the rate of conversion to vitamin A by the organism and not an index of nutritional reserves or intake. The vitamin A level in the plasma is subject to great variation even in normal, carefully controlled animals. However, it seems probable that refined methods will show consistent low values for the blood with deficiency, as compared with higher (although variable) values with normal nutrition. The concentration of vitamin A in the blood is independent of the quantity stored in the liver. Hardly enough work has been done on this subject to evaluate the significance of blood determinations.

After carotene is absorbed into the thoracic duct it is found in the liver in quantities dependent on the species. When a colloidal aqueous suspension of carotene is injected into the portal or systemic circulation, it is rapidly removed from the blood stream by the reticulo-endothelial system.³⁴ If sections of the liver are examined immediately after the injection, granules of pigment may be seen in the Kupffer cells. A greater part of the carotene is thus held in the liver, although carotene is held to a lesser extent elsewhere in the animal. The carotene in the Kupffer cells slowly disappears, and the concentration of vitamin A in the liver increases. Possibly the vitamin A of the liver also resides in the Kupffer cells, since livers which have had the parenchymal cells severely damaged by phosphorus poisoning, which supposedly does not harm the Kupffer cells, retain their store of vitamin A, and blocking of the reticulo-endothelial system by injections of certain particles lowers the capacity of the liver for storing vitamin A.³⁵ That the liver cells are necessary for the conversion of carotene to vitamin A is suggested by the fact that conversion is decreased by phosphorus poisoning³⁶ and, in certain diseases of cattle which involve the parenchymal cells, carotene remains unconverted in large quantities in the Kupffer cells.

It is important to note that in some cases carotemia is due to a low ability to convert carotene and not necessarily to a high intake. The rate of transformation of carotene is diminished by diabetes³⁷ and certain diseases of the liver.

The conversion of carotene to vitamin A in vivo is a slow, variable process, demonstrable only after several days, in the rat, rabbit, hen and cow, while there is some question as to whether it occurs at all in the cat, a carnivorous animal.³⁸ In view of this fact, it is not surprising that attempts to bring about conversion in vitro have been in general unsuccessful.³⁹ Thus cir-

cumstantial evidence suggests the liver as the site of the formation of vitamin A, although no direct proof is available.

Vitamin A and Milk.—The surprisingly low reserves of vitamin A in the newborn⁴⁰ make plain the necessity for an adequate intake of vitamin A during infancy. The vitamin A content of milk is therefore important. Since the conversion of carotene to vitamin A in the animal is not always immediate and complete, a certain amount of the vitamin A activity of milk, eggs and other biologic fluids and tissues is due to carotene, the proportion depending on the dietary intake of plant products and the efficiency of the transformation mechanism of the particular animal.⁴¹ It has been shown with cows consuming the same ration that about two thirds of the total activity in Guernsey milk is due to carotene, and this ratio remains rather constant as long as carotene is included in the ration; the carotene content of Ayrshire milk represents only about one third of the total activity, while Jersey milk contains about equal quantities of vitamin A and the provitamin. Thus the proportion of vitamin A activity due to carotene depends on the breed. It is an interesting fact that goat milk contains practically no carotene but that the vitamin A value remains remarkably constant even with considerable variation in rations.

One cannot conclude that the more highly pigmented milks necessarily have a higher vitamin A activity, for, although Guernsey milk may contain more carotene than other milks, it also contains less vitamin A, so the differences according to breed in total vitamin A activity seem to be small.

Most animals show a tendency to regulate the vitamin A content of their milk at a level characteristic of the species. In times of excess dietary intake, vitamin A accumulates in the liver and is used to stabilize the vitamin A content of the milk when the intake is less favorable.⁴² Although this stabilizing process is not comparable with the efficiency of strict physiologic control, the vitamin A level in milk remains reasonably constant during average dietary variations.⁴³

The extent to which the total vitamin A activity of the milk varies with the dietary intake depends on the nutritional state of the animal.⁴³ When the carotene intake of the cow is increased from a deficient level there is an immediate increase in both carotene and vitamin A in the milk; however, less influence is shown by each increment until a maximum is reached beyond which increased carotene intake does not affect the level of either carotene or vitamin A in the milk.

Cow's colostrum is from ten to one hundred times richer in vitamin A activity than milk, thus providing the calf with a concentrated food during the first few days of life.⁴⁴ There is no obvious variation in the vitamin A value of cow's milk with later periods of lactation.⁴⁵

Dann⁴⁴ has shown that the combined carotene and vitamin A content of early human milk has from about

33. Schneider, E., and Widmann, E.: *The Carotene and Vitamin A Content of Human Blood*, Klin. Wchnschr. 14: 670 (May 11) 1935.
Chesney, Jack, and McCoard, A. B.: *Vitamin A of Serum Following Administration of Haliver Oil in Normal Children and in Chronic Steatorrhea*, Proc. Soc. Exper. Biol. & Med. 31: 887 (April) 1934. McCollum, E. McCoard and Luce-Clausen, C. Clausen, R. R. and others.

34. Drummond, J. C.: *The Vitamins*, in *Textbook of Biochemistry*, Philadelphia, W. B. Saunders Company, 1935.

35. Lasch, Fritz, and Koller, Dietrich: *The Influence of Blocking the Reticulo-Endothelial System on Vitamin A Metabolism of the Liver*, Klin. Wchnschr. 13: 1636 (Nov. 7) 1936.

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37. Ralli, Elaine P.; Pariente, A. C.; Brandalcione, Harold, and Davidson, Sidney: *Effect of the Daily Administration of Carotene on the Blood Carotene of Normal and Diabetic Individuals*, J. A. M. A. 106: 1573 (June 6) 1936.

38. Carper, N. S.: *The Transformation of Carotene into Vitamin A as Shown by a Study of the Absorption Spectra of Rat Liver Oils*, Biochem. J. 24: 980 (March) 1930. Harris, H. Drummond.

39. Drummond, H. Harris.

40. Dann, W. J.: *Transmission of Vitamin A from Parents to Young in Mammals*, Biochem. J. 28: 2141, 1934.

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42. Harris, L. J.: *Vitamins*, in *Annual Review of Biochemistry*, Stanford University, Calif., Stanford University Press 2: 271, 1933. Sherman.

43. Harris, L. J.; Gillam and others.

44. Dann, W. J.: *The Vitamin A and Carotenoid Contents of Human Colostrum and Milk*, Biochem. J. 30: 1644 (Sept.) 1936.

45. Gillam, E. G.; Heilbron, I. M.; Ferguson, W. S., and Watson, S. J.: *Variations in the Carotene and Vitamin A Values of the Milk Fat (Butter) of Cattle of Typical English Breeds*, Biochem. J. 30: 1728 (Aug.) 1936.

five to ten times the biologic activity of cow's milk and is not appreciably increased by feeding supplements of cod liver oil* to the mother. Other investigators have reported that late human milk contains about the same amount of carotene and vitamin A as cow's milk. Human colostrum has from two to three times the biologic activity of early milk.

Vitamin A and Eggs.—Egg and milk formation are analogous biologic functions, and in general the vitamin A value of the egg is subject to the influences previously described for milk.⁴⁶ Dark-colored egg yolks are usually richer in vitamin A activity than light-colored yolks; however, pale eggs produced by hens on diets devoid of carotene and xanthophyll but containing cod liver oil are not appreciably lower in vitamin A potency. When the hen is on a deficient diet the vitamin A value of the egg will slowly decrease as the reserves of the liver are depleted, with a concomitant decrease in the production of eggs. Excess feeding of concentrates leads to considerable temporary increase of vitamin A

depend on light of high intensity, while the rods are sensitive only to light and are especially adapted to function in dim light.⁴⁹

The outside end of the rod which lies adjacent to the pigmented epithelium of the retina contains visual purple (rhodopsin) found only in the rods and serving to transform the energy of dim light into nerve impulses which vary, within limits, with the intensity of the light. Although the complete details of this photochemical process have not been ascertained, it has been suggested and considerable proof obtained that the cycle of events in the retinal rod when a molecule of visual purple receives a quantum of light energy is that shown in the accompanying illustration.⁵⁰

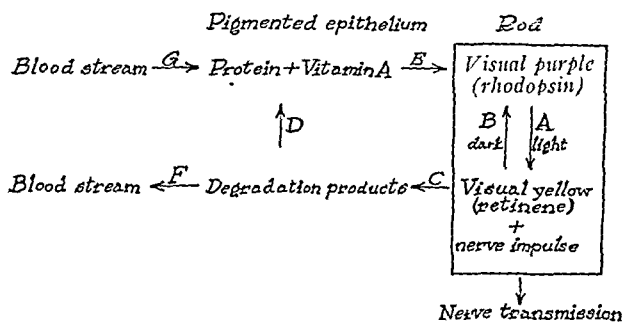
The photosensitive pigment (visual purple) absorbs the light and as a consequence is decomposed into products which initiate a nerve impulse (reaction A). Other chemical systems immediately intervene to resynthesize these products to a new molecule of receptor pigment (reaction B or C + D + E) or they are disposed of as waste materials (reaction F) and an entirely new molecule is made from fresh raw material to take their place (reaction G + E). The quantity of visual purple which is present at any instant will depend on the difference between the rate of decomposition (reaction A; intensity of light) and the rate of synthesis (reactions B and E). In bright light the equilibrium of these reactions is displaced so that visual purple is practically absent from the retina, while in the dark the equilibrium is displaced in the opposite direction and visual purple is present in maximum quantity. Normal vision in dim light, whatever may be the details of the reaction, depends on an equilibrium somewhere between these two extremes.

Two processes are proposed for the synthesis of visual purple: from visual yellow by simple reversal of photolysis and from the protein plus vitamin A with the aid of the pigmented epithelium. That a certain proportion of visual yellow or retinene is converted to visual purple is observed in the isolated retina which has been bleached and replaced in the dark; the remainder decomposes and is lost or resynthesized by aid of the pigmented epithelium. The latter process takes place in the intact eye but has never been observed in the isolated retina. In vitamin A deficiency, reaction B or E or both are too slow to keep the supply of visual purple adequate.

The fact that the pigmented epithelium is essential to the visual purple process suggests the possibility that it, like other epithelial structures in times of vitamin A scarcity, may not function normally and thus indirectly also contribute toward visual impairment.

The chemistry and the physiology of vitamin A as revealed in its function as a component of visual purple do not necessarily imply the presence of a photosensitive substance in the more generally affected epithelial cells. However, they do suggest that vitamin A may serve as a prosthetic group in other conjugated proteins. The exact nature of these substances and how they function is one of the most interesting problems in cell physiology.

Vitamin A and Other Body Processes.—In association with vitamin A deficiency no significant deviations from the normal have been found for carbohydrate



Vitamin A and the perception of light.

in the egg, but the value soon returns to a more stable level after the removal of the oil, in spite of the still high reserves in the liver.

Vitamin A and Cell Physiology.—One of the earliest functional changes observable in association with vitamin A deficiency is a decreased ability for dark adaptation, nutritional night blindness which responds to vitamin A therapy. The quantity of visual purple present in the retinas which have been dark adapted for varying periods demonstrates that the resynthesis of visual purple in vitamin A deficient animals is abnormally slow. It is possible also to demonstrate experimentally the correlation between the slow rate of regeneration of visual purple and the delayed dark adaptation.⁴⁷ Faulty twilight vision in vertebrates occurs with vitamin A deficiency because the mechanism for the formation of visual purple in the rod of the retina is defective.

Wald⁴⁸ has recently shown the previously reported high vitamin A value of retinal tissue to be due to vitamin A. He has presented strong evidence that visual purple is a conjugated protein in which vitamin A is a prosthetic group.

The cones of the retina are associated with the perceptions of color and other visual functions which

46. Russel, W. C., and Taylor, M. W.: Vitamin A in Egg and Food, Chem. Abstr. 30: 529 (Jan.) 1936; Use of Vitamin A and D by the Hen, J. Nutrition 10: 613 (Dec.) 1935. Sherman,⁴⁹ Cruickshank and Moore.⁴⁵

47. Fridericia, L. S., and Holm, E.: Influence of Deficiency of Fat-Soluble A Vitamin in the Diet on the Visual Purple in the Eye of the Rat, Am. J. Physiol. 73: 63 (June) 1925.

48. Wald, George: Vitamin A in Eye Tissues, J. General Physiol. 18: 905 (July) 1925. Wald, George, and Clark, Anna-Betty: Sensory Adaptation and Chemistry of the Retinal Rod, Am. J. Physiol. 116: 157 (June) 1936. Wald.³

49. Tansley, Katharine: Factors Affecting the Development and Regeneration of Visual Purple in the Mammalian Retina, Proc. Roy. Soc. London, S.B. 114: 79 (Nov.) 1933. Hecht.⁵⁰

50. Hecht, Selig: Rods, Cones and the Chemical Basis of Vision, Physiol. Rev. 17: 273 (April) 1937. Wald.⁴

metabolism, blood chemistry, absorption of fat, carbohydrate and proteins, nitrogen metabolism, and calcium and phosphorus metabolism.⁵¹ Fat metabolism does not seem to be obviously altered, as fat is still absorbed, mobilized, desaturated and oxidized during vitamin A deficiency.⁵²

Repeated attempts have failed to show any deviations of immunologic mechanisms with vitamin A nutrition which were not due to secondary factors, such as inanition and infection.⁵³

PATHOLOGY

The specific pathologic changes of vitamin A deficiency are found in many epithelial structures and may be epitomized as follows: atrophy of the epithelium concerned, reparative proliferation of basal cells, and differentiation of the new product into a stratified keratinizing epithelium. This replacement epithelium, regardless of the previous functions and structure of the region, is identical in all locations and comparable in all its layers with epidermis. Other consequences of vitamin A deficiency are common to other nutritional disturbances, including other vitamin deficiencies.⁵⁴

Epithelial Tissues.—Since the pathognomonic pathologic features of vitamin A deficiency are the consequence of epithelial changes, these will be described in some detail. Replacement by keratinizing epithelium is a late effect and follows a nonviable degree of epithelial atrophy. Reparative proliferation on the part of basal cells follows. In epitheliums of the stratified and transitional types, such as those of the cornea, conjunctiva, bladder, ureter and renal pelvis, the basal cells engaged in reparative proliferation may maintain a continuous layer from the beginning, and hence the process appears to be true metaplasia. In other epitheliums, such as those of ducts of glands, the respiratory mucosa and the uterus, where focally distributed basal cells alone have proliferative power, scattered areas of new cells appear. These groups of new (reparative) cells, by their continued growth, undermine, coalesce, and replace the original epithelium by a stratified keratinizing epithelium. Both in experimental animals and in infants, an atrophic epithelium having the histologic appearances of viability may remain for a period above the replacement epithelium. The latter may consist at first of only one or two layers of flat cells, as if the first effort was to cover surface as rapidly as possible. Continued multiplication of cells results in the epidermis-like tissue and separation of the atrophic original epithelium.

Many of the striking gross pathologic features of the deficiency in man and in animals are the outcome of the accumulation of keratinized epithelial cells in glands and their ducts and in other organs. In glands, cysts of considerable size, filled with yellowish cheesy masses of keratinized cells, are formed. In the lungs of human infants as well as of experimental animals this process leads to occlusion of bronchi, formation and filling of bronchiectatic cavities with keratinized cells, and atelec-

tasis. Early workers regarded such cysts as abscesses, and hence vitamin A was believed to protect against infection.

The plugs of desquamated epithelial cells in ducts, bronchi and trachea, which open on regions normally infected with bacteria, act as a culture medium, yet rarely are the surrounding tissues invaded, presumably because of the protection offered by the stratified epithelium.

*Distribution of the Keratinizing Metaplasia.*⁵⁵—In the rat, the order of response to vitamin A deficiency by keratinizing metaplasia is (1) salivary glands, including the submaxillary, parotid and all accessory glands of the tongue, buccal cavity and pharynx; (2) respiratory tract, including the nares, maxillary sinuses, Jacobson's organ, trachea and bronchi; (3) genito-urinary tract, including the renal pelves, ureters, bladder, epididymis, prostate, seminal vesicles, coagulating glands, uterus, oviducts and accessory sex glands of the vulva, and (4) eyes and parocular glands, including the corneal and palpebral conjunctiva, the harderian, intra-orbital and extra-orbital lacrimal glands and the meibomian glands.

In the guinea pig, lesions of the conjunctiva and parocular glands did not develop in our experiments⁵⁶ even though advanced lesions (keratinizing metaplasia and its consequences) were found in all the other locations recorded for the rat. This we now know to have been due to the vitamin A in the orange juice used to prevent vitamin C deficiency. If cevitamic acid is employed for this purpose, the eyes respond late in the course of vitamin A deficiency, though less conspicuously than in rats. Early and extraordinary degrees of metaplasia as compared with this condition in the rat take place in the uterus and bladder of guinea pigs. In both rats and guinea pigs, permanent keratinizing of the vaginal epithelium takes place.

Mason⁵⁷ has studied in detail the consequences of vitamin A deficiency on the genital organs of rats. Atrophy of the testes in the male, noted by Wolbach and Howe,⁵⁸ was proved to be constant in animals with vitamin A deficiency even with an adequate supply of vitamin E.⁵⁹ In females⁶⁰ no injury of the ova, impairment of implantation or disturbances of endocrine function of ovary and anterior hypophysis could be shown. Retardation of growth and death of fetuses due to placental injury were found. Prolonged gestation due to decreased vitality and death of fetuses and difficult parturition with excessive uterine bleeding were other consequences. Resorption of fetal sites occurred with marked deficiencies. The effect on the fetus was shown to be due to placental injury in con-

51. Harris, L. J.: Vitamins, in *Annual Review of Biochemistry*, Stanford University, Calif., Stanford University Press 1: 365, 1932.

52. Harris, L. J.: Vitamins, in *Annual Review of Biochemistry*, Stanford University, Calif., Stanford University Press 4: 355, 1935.

53. Gelhorn, Ernst, and Dunn, Joan O.: The Influence of Lack of Vitamin A in the Diet on the Phagocytosis Promoting Properties of the Blood Serum, *J. Nutrition* 13: 317 (March) 1937. Sherman.⁵⁹ Harris, footnotes 42, 51 and 93.

54. Jackson, C. M.: Recent Work on the Effects of Inanition and Malnutrition on Growth and Structure, *Arch. Path.* 7: 1042 (June), 8: 81 (July), 273 (Aug.) 1929.

55. Goldblatt, Harry, and Benischek, Maria: Vitamin A Deficiency and Metaplasia, *J. Exper. Med.* 46: 699 (Nov.) 1927. Tyson, M. D., and Smith, A. H.: Tissue Changes Associated with Vitamin A Deficiency in the Rat, *Am. J. Path.* 5: 57 (Jan.) 1929. Wolbach and Howe, footnotes 56, 58 and 68. Blackfan and Wolbach.⁶¹

56. Wolbach, S. B., and Howe, P. R.: Vitamin A Deficiency in the Guinea Pigs, *Arch. Path.* 5: 239 (Feb.) 1928.

57. Mason, K. E., and Wolfe, J. M.: Relation of Castration to Vitamin A Deficiency in the Rat, *J. Nutrition* 9: 725 (June) 1935. Mason, K. E., and Ellison, E. T.: The Demonstration of Oestrus in the Vitamin A Deficient Rat by Supravital Study of the Vaginal Smears, *ibid.* 10: 1 (July) 1935; Changes in the Vaginal Epithelium of the Rat After Vitamin A Deficiency, *ibid.* 9: 735 (June) 1935. Mason, footnotes 59 and 60.

58. Wolbach, S. B., and Howe, P. R.: Tissue Changes Following Deprivation of Fat-Soluble A Vitamin, *J. Exper. Med.* 42: 753 (Dec.) 1925.

59. Mason, K. E.: The Specificity of Vitamin E for the Testis: I. Relation Between Vitamins A and E, *J. Exper. Zool.* 55: 101 (Jan.) 1930.

60. Mason, K. E.: Foetal Death, Prolonged Gestation, and Difficult Parturition in the Rat as a Result of Vitamin A Deficiency, *Am. J. Anat.* 57: 303 (Sept.) 1935.

trast to vitamin E deficiency when the primary effect is on fetal tissues.

In human infants⁶¹ keratinizing metaplasia has been found in the conjunctiva, cornea, mucosa of the nares, accessory sinuses, including the maxillary antrums, trachea, bronchi, pancreas, renal pelvis, ureters, salivary glands, uterus and periurethral glands. The commonest and earliest appearance of the metaplasia is in the trachea and the bronchi. Next in frequency is its appearance in the pelvis of the kidney. The early effect of the deficiency on the respiratory mucosa is a satisfactory explanation of the frequency, severity and persistence of the pneumonia that has been responsible in most instances for the death of infants deficient in vitamin A.⁶²

The Eyes.—In the human being, as in experimental animals, involvement of the eye occurs late. The earliest demonstrable change is metaplasia of the epithelium of the conjunctiva and the cornea. Atrophy and metaplasia (of ducts) of the lacrimal glands contribute to the consequences of the accumulation of keratinized cells in the conjunctival sac. The cornea becomes vascularized, edematous and infiltrated with leukocytes. Necrosis of the cornea may occur beneath intact hyperkeratotic epithelium. Infection of the cornea, favored by the accumulation of keratinized cells, may lead to ulceration and hypopyon.

The Teeth.—Owing to atrophy and metaplasia of the enamel-forming organ, the continuously growing incisors of rats and guinea pigs are profoundly affected. After atrophy of the enamel-forming organ there are atrophy and cessation or depression of the functioning of odontoblasts. The formation of enamel stops, and striking deformities of the tooth take place because of diminished and defective formation of dentin.⁶³

By keeping rats for long periods in a state of incomplete vitamin A deficiency, Orten, Burn and Smith⁶⁴ have produced tumor-like formations and tooth duplications at the formative end of the incisors, understandable because of the effect of deficiency on the enamel-forming epithelium. Boyle⁶⁵ has described in the tooth germ of an infant with vitamin A deficiency changes in the enamel organ comparable to those occurring in rodent incisors. May Mellanby⁶⁶ has summarized her work on teeth in an excellent review and presents evidence that absent or defective enamel and dentin formation are consequences of vitamin A deficiency. Recently May Mellanby and King,⁶⁷ presumably on the basis of Edward Mellanby's neurologic observations on vitamin A deficiency, expressed the thought that "loss of neurotrophic control owing to vitamin A deficiency may be partly responsible for pyorrhoea and other diseases of the periodontal tissues and even of dental caries." In all probability, vitamin A deficiency during the formative period of teeth outranks in the human being all other vitamin deficiencies in importance.

The Respiratory Tract.—The consequences of vitamin A deficiency on the respiratory tract can be inferred from the fact that the respiratory mucosa in all locations undergoes keratinizing metaplasia. As atrophy precedes the replacement, clinical effects of the deficiency in all probability occur long before keratinizing epithelium makes its appearance. Death due to pneumonia is common in infants.⁶² The pneumonia is usually of the interstitial or peribronchitis type. Regions of atelectasis due to plugging of bronchioles by keratinized cells and bronchiectasis due to cystic dilatation of bronchi from the same cause are gross features of the lungs. The lusterless opaque lining of keratinized cells may be apparent in larger bronchi and tracheas. In the accessory sinuses and nares and probably in the eustachian tubes are other regions where consequences of vitamin A deficiency are obvious.

The Skin.—No noteworthy consequence of vitamin A deficiency in the skin of experimental animals has been described. In Blackfan and Wolbach's cases⁶⁸ no cutaneous condition was noted that could be attributed solely to the deficiency. Dryness and scaliness of the skin have been noted, as in malnutrition of diverse causes in infants.

In sexually mature persons, cutaneous lesions associated with vitamin A deficiency and analogous to those occurring in other epithelial structures have been reported by several authors, chiefly from China, but also from South Africa, England and America. The skin becomes dry and rough and then a papular eruption appears. The papules are formed by hyperkeratosis of the hair follicles. Atrophy of sweat glands and keratinizing metaplasia of their ducts are responsible for absence of sweat. Sebaceous glands atrophy and undergo keratinizing metaplasia. The order of appearance and distribution of the papules due to hyperkeratosis of hair follicles is the anterolateral aspect of the thighs and the posterolateral aspect of the upper part of the forearms, extensor surface of the arms and legs, shoulders, abdomen, back, buttocks, the fore part of the neck and the back of the neck. There is a general increase in the pigmentation of the skin and conjunctivae, although in the hyperkeratotic hair follicles and immediately adjacent epidermis the pigment is decreased. Mu, Frazier and Pillat⁶⁹ have demonstrated an increase both of melanin-building pigments and of melanin in the darkened skin and conjunctivae. The best clinical and pathologic descriptions and the complete bibliography are to be found in a recent paper by Frazier and Hu,⁷⁰ the first to describe this condition.

The Stomach and Intestine.—Hyperkeratosis with ulceration in the forestomach of rats as a consequence of vitamin A deficiency has frequently been reported. This part of the stomach of the rat is normally lined with stratified squamous epithelium. While hyperkeratosis is of frequent occurrence (we have seen and studied these lesions), it cannot be regarded as specific. Pappenheimer and Larimore,⁷¹ who were the first to describe such lesions, excluded vitamin deficiency as

61. Blackfan, K. D., and Wolbach, S. B.: Vitamin A Deficiency in Infants, *J. Pediat.* 3: 679 (Nov.) 1933.

62. Blackfan and Wolbach.⁶¹ Sweet and K'Ang.⁷²

63. Wolbach, S. B., and Howe, P. R.: The Incisor Teeth of Albino Rats and Guinea Pigs in Vitamin Deficiency and Repair, *Am. J. Path.* 9: 275 (May) 1933.

64. Orten, Aline C.; Burn, C. G., and Smith, A. H.: Effects of Prolonged Chronic Vitamin A Deficiency in the Rat with Special Reference to Odontomas, *Proc. Soc. Exper. Biol. & Med.* 36: 82 (Feb.) 1937.

65. Boyle, P. E.: Manifestations of Vitamin A Deficiency in a Human Tooth, *J. Dental Research* 13: 39 (Feb.) 1933.

66. Mellanby, May: The Influence of Diet on the Structure of the Teeth, *Physiol. Rev.* 3: 545 (Oct.) 1928.

67. Mellanby, May, and King, J. D.: Diet and the Nerve Supply to the Dental Tissues, *Brit. Dent. J.* 36: 538 (June) 1934.

68. Wolbach, S. B., and Howe, P. R.: Epithelial Repair in Recovery from Vitamin A Deficiency: An Experimental Study, *J. Exper. Med.* 57: 511 (March) 1933.

69. Mu, J. W.; Frazier, C. N., and Pillat, A.: Melanin Pigment of the Skin and Conjunctiva in Avitaminosis A in Man, Chinese *J. Physiol.* 11: 247 (March) 1937.

70. Frazier, C. N., and Hu, C. K.: Nature and Distribution According to Age of Cutaneous Manifestations of Vitamin A Deficiency, *Arch. Dermat. & Syph.* 33: 825 (May) 1936.

71. Pappenheimer, A. M., and Larimore, L. D.: The Occurrence of Gastric Lesions in Rats: Their Relation to Dietary Deficiency and Its Ingestion, *J. Exper. Med.* 40: 719 (Dec.) 1924.

a factor. Fuzimaki has reported on unsatisfactory evidence the development of the gastric lesions into carcinoma. That vitamin A deficiency and carcinogenesis are not related has been shown by Sugiura and Benedict.⁷²

Lesions of the stomach and intestine in association with vitamin A deficiency are of rare occurrence in man and in experimental animals and, beyond slight degrees of atrophy of the mucosa, are probably not related specifically to the deficiency. The esophagus in man⁷³ and animals responds by hyperkeratinization. References to gastro-intestinal disturbances in man caused by vitamin A deficiency are given by Robertson.⁴

Genito-Urinary Tract.—In rats complete obstruction of the ureters and renal pelvis due to accumulation of keratinized cells may be the cause of death. In human infants⁶⁸ less marked degrees of this change are common and may be grossly recognizable post mortem. The formation of calculi in vitamin A deficient rats is probably dependent on an additional factor, as calculi are of extremely rare occurrence in our experience. Keratinization in the urinary bladder occurs in man as well as in laboratory animals. Atrophy of the testes and keratinizing metaplasia of the uterine mucosa may be expected in human adults.

The Nervous System.—Signs suggestive of nerve lesions in human beings with vitamin A deficiency have not been reported. The experience of investigators has varied in regard to the occurrence of paralysis and other signs of nervous lesions in experimental animals. Hughes, Aubel and Lienhardt⁷⁴ in 1928 described extreme incoordination and spasms in swine and found degeneration of myelin sheaths in the spinal cord and in the optic, sciatic and femoral nerves. The same writers⁷⁵ also recorded similar signs and lesions in fowls and cattle. In neither report were the affected nerve fibers identified as motor or sensory. Edward Mellanby⁷⁶ in 1931 reported incoordination, spasticity and paralysis in dogs nurtured on diets containing much cereal and no vitamin A. Degeneration of myelin sheaths in the spinal cord, particularly in the sensory tracts, was reported.

Seifried⁷⁷ in 1932 described ataxia, incoordination and convulsions in fowls. He found degeneration in anterior horn cells of the cord, in ganglion cells of the motor cortex, the nucleus dentatus and nuclei of the medulla, and in the Purkinje cells of the cerebellum. Demyelination was found in the spinal cord and in the sciatic, brachial and optic nerves. It is to be noted that motor nerve cells were largely involved.

Zimmerman⁷⁸ in 1933 described paralysis in rats after very short periods on a vitamin A deficient diet, the majority showing paralysis within forty days. Degeneration of myelin sheaths was found in the brachial plexus and the sciatic nerves but not in the optic nerves. In the spinal cord the lesions were in the sensory tracts and in the crossed and direct pyramidal tracts. Details of the experiment and an

account of the signs exhibited by these animals were subsequently reported by Aberle.⁷⁹

Edward Mellanby⁸⁰ in 1934 recorded degeneration of cells of the gasserian ganglion and myelin degeneration of the ophthalmic division of the fifth nerve in rabbits, a dog and rats. He stated, though without presenting his evidence, that degeneration of the afferent nerves is widespread with vitamin A deficiency. The importance of Mellanby's paper lies in his speculation that the epithelial changes of vitamin A deficiency are secondary to loss of neurotrophic control. Similar speculations by May Mellanby⁶⁷ in regard to the pathology of teeth have been mentioned. Setterfield and Sutton⁸¹ in 1935 reported degeneration of myelin sheaths in the sciatic and femoral nerves in white rats and claimed superiority for their technic using polarized light on frozen sections of nerves fixed in solution of formaldehyde. Zimmerman and Cowgill⁸² confirmed Zimmerman's⁷⁸ and Aberle's⁷⁹ work and stated that carotene added to the diet prevents the nerve lesions. Carotene, however, did not restore function to the nervous system, even though other evidences of A deficiency were cured. This was attributed to the permanent nature of the nerve lesions.

Failure to observe signs of nerve lesions or to find degeneration of myelin sheaths in vitamin A deficient animals are recorded by an impressive number of workers. Duncan⁸³ in 1931 reported: "No consistent differences were observed in nerves from animals on diets low in vitamin A or E when compared to nerves from rats of the same age" and "the nerves from healthy well nourished rats exhibited changes equal to those in rats extremely emaciated and paralyzed from the effects of feeding on a diet low in vitamin B." Suzman, Muller and Ungley⁸⁴ found no nervous lesions in adult dogs on a diet deficient in vitamin A. Grinker and Kandel⁸⁵ failed to observe nervous symptoms in monkeys fed on a vitamin A deficient diet and found no degenerative lesions of myelin sheaths in the central nervous system. Arthur Weil of Chicago and Charles Davison of New York, in the discussion of Grinker and Kandel's paper, reported failures to find nerve lesions in rats in experiments with vitamin A deficiency.

Radhakrishna Rao,⁸⁶ in studies with rabbits, rats and fowls, although often finding myelin degeneration in the afferent nerves of the eye, failed to correlate the degeneration with the onset and course of the ocular lesions. Repair of the corneal lesions following administration of vitamin A took place without recovery of the nerve lesions. He concluded that "there is no evidence to suggest that xerophthalmia is secondary to

79. Aberle, S. B. D.: Neurological Disturbances in Rats Reared on Diets Deficient in Vitamin A, *J. Nutrition* 7: 445 (April) 1934.

80. Mellanby, Edward: Xerophthalmia, Trigeminal Degeneration and Vitamin A Deficiency, *J. Path. & Bact.* 38: 391 (May) 1934.

81. Setterfield, H. E., and Sutton, T. S.: The Use of Polarized Light in the Study of Myelin Degeneration: The Degeneration of Myelinated Nerves in Avitaminosis A in the White Rat, *J. Nutrition* 9: 645 (June) 1935.

82. Zimmerman, H. M., and Cowgill, G. R.: Lesions of the Nervous System in Vitamin Deficiency: The Effect of Carotene in the Treatment of the Nervous Disorder in Rats Fed a Diet Low in Vitamin A, *J. Nutrition* 11: 411 (May) 1936.

83. Duncan, Donald: The Marchi Method: A Discussion of Some Sources of Error and the Value of This Method for Studying Primary Changes in the Myelin Sheath, *Arch. Neurol. & Psychiat.* 25: 327 (Feb.) 1931.

84. Suzman, M. M.; Muller, G. L., and Ungley, C. C.: An Attempt to Produce Spinal Cord Degeneration in Dogs Fed a High Cereal Diet Deficient in Vitamin A: The Incidental Development of a Syndrome of Anemia, Skin Lesions, Anorexia and Changes in the Concentration of Blood Lipoids, *Am. J. Physiol.* 101: 529 (Aug.) 1932.

85. Grinker, R. R., and Kandel, Ernestine: Experimental Vitamin (A, B, B₂ and B Complex) Deficiency: Histologic Changes in the Central Nervous System, *Arch. Neurol. & Psychiat.* 30: 1287 (Dec.) 1933.

86. Radhakrishna Rao, M. V.: Studies on Vitamin A Deficiency: I. Xerophthalmia and Trigeminal Nerve Degeneration, *Indian J. M. Research* 29: 439 (Oct.) 1936.

72. Sugiura, Kanematsu, and Benedict, S. R.: A Critical Study of Vitamin A and Carcinogenesis, *J. Cancer Research* 14: 306 (June) 1930.

73. Sweet, L. K., and K'Ang, H. J.: Clinical and Anatomic Study of Avitaminosis Among the Chinese, *Am. J. Pediat.* 50: 699 (Sept.) 1935.

74. Hughes, J. S.; Aubel, C. E., and Lienhardt, H. F.: The Importance of Vitamin A and Vitamin C in the Ration of Swine, *Tech. Bull. 23, Kansas State Agricultural Experiment Station*, June 1928.

75. Hughes, J. S.; Lienhardt, H. F., and Aubel, C. E.: Nerve Degeneration Resulting from Avitaminosis A, *J. Nutrition* 2: 183 (Nov.) 1929.

76. Mellanby, Edward: The Experimental Production and Prevention of Degeneration in the Spinal Cord, *Brain* 54: 247 (Sept.) 1931.

77. Seifried, Oskar: Cited by Robertson.⁴

78. Zimmerman, H. M.: Lesions of the Nervous System in Vitamin Deficiency, *J. Exper. Med.* 57: 215 (Feb.) 1933.

a loss of the neurotrophic control of the ophthalmic division of the trigeminal nerve."

Eveleth and Biester⁸⁷ maintained that "neither vitamins A nor B complex are responsible for the myelin degeneration of the spinal cords and peripheral nerves in swine."

Wolbach and Howe⁸⁸ in 1925 stated: "As the rats exhibited no symptoms pointing to lesions of the nervous system, the peripheral nerves were not studied. No lesions were found in brain, cerebellum and sympathetic ganglia." Marchi preparations were not made. A review of their records show that a few rats, shortly before death, showed extreme muscular weakness and did drag their hind legs. This was attributed to extreme degeneration of the muscles. In work now in progress under a grant from the Milton Fund to the Harvard Dental School, in which diets devised by Otto Bessey are being used, signs of nerve lesions do not appear in rats and guinea pigs. Studies of the nervous system made by R. L. Swank⁸⁹ with his very reliable modification of the Marchi technic failed to show degeneration of myelin in the spinal cord or peripheral nerves in rats and guinea pigs which had exhibited extreme keratinizing metaplasia of epitheliums.

There is no substantial evidence that degeneration of myelin sheaths is a specific consequence of vitamin A deficiency. That it does occur in some strains of laboratory animals cannot be denied. The relation of degeneration of skeletal muscle to the signs regarded as of nervous origin is a problem having a bearing on the subject. Severe degeneration of muscle is common in association with vitamin A deficiency in man, guinea pigs and rats.⁸⁹

We have observed degeneration of skeletal muscles in guinea pigs deficient in vitamin C and in rats deficient in vitamin B₂ complex. Goettsch and Pappenheimer⁹⁰ have described a "progressive highly selective and ultimately fatal dystrophy of the voluntary muscles" in guinea pigs and rabbits on diets with adequate vitamin content. No significant lesions were found in the spinal cord and peripheral nerves. The same authors, with Rogers,⁹¹ could find no alterations of the motor nerve terminals in muscle. It is not clear whether Marchi preparations were employed, as emphasis was placed on silver impregnation methods. These papers by Pappenheimer and his associates are pertinent to the present discussion because they indicate the possibility of ascribing to nerve lesions behavior of laboratory animals caused by muscle degeneration.

Since degeneration of myelin sheaths is not a constant accompaniment of vitamin A deficiency, as is epithelial metaplasia, it is not necessary to present the many objections to Mellanby's thesis that loss of nerve function may be the cause of the epithelial changes which are invariably the consequence of vitamin A deficiency regardless of species.

Other consequences of vitamin A deficiency, which are not specific, are (1) inability to store fat, (2)

hemosiderosis apparently due to anemia, (3) cessation of growth of bones, (4) the degenerative lesions of skeletal muscles already mentioned and (5) lymphoid hypoplasia of the spleen.

Loss of fat occurs in spite of an abundant supply, but this takes place with other vitamin deficiencies, notably deficiency of the B₂ complex. The anemia in infants and experimental animals is accompanied by hemosiderosis in the spleen and liver and, finally, by atrophy of the spleen and bone marrow. In animals, restoration of vitamin A to the diet causes regeneration of bone marrow, disappearance of hemosiderin from the spleen and liver and, in the rat and the guinea pig, active hyperplasia of the spleen and an outburst of erythroblastic activity. The anemia and hemosiderosis also occur with B₂ complex deficiency and with prolonged partial vitamin C deficiency.

The effect of vitamin A deficiency on growth of bone is complete cessation of endochondral bone formation, indistinguishable from that occurring in any long-continued state of malnutrition.

While Mason⁹² has studied some of the consequences of vitamin A deficiency in the rat on gestation and parturition, the importance of further research is indicated by the brief publication of Hale⁹³ recording in the offspring of vitamin A deficient swine various congenital defects, including defective eyes, absence of eyes, misplaced kidneys, harelip, cleft palate and extra earlike growths.

Excessive administration of vitamin A concentrates to experimental animals has been reported to result in damage to bone, kidneys, skin and other soft tissue. However, conclusive evidence awaits a preparation of pure material. No injury is likely by use of the usual liver oils even in high dosage. Large doses of carotene given orally or by injection are innocuous.⁹³

Repair in Recovery from Vitamin A Deficiency.—Repair after restoration of vitamin A to the diet is rapid. In rats there is a lag of a few days, but within six to eight days gain in weight, resumption of growth in bones and teeth, and regeneration of bone marrow and spleen are apparent. Reparative changes in the metaplastic epithelium begin as early as the fifth day.⁶⁹ The initial changes are separation of superficial keratinized cells and vacuolization of cells of intermediate layers. The epithelium becomes divided into two zones in consequence of progress of vacuolar degeneration and leukocytic infiltration. All those cells, apparently irreversibly differentiated toward keratinization, undergo degeneration; the deep zone, corresponding to the stratum germinativum of epidermis, survives, and the cells proceed to differentiate into the type of epithelium originally present. On the whole the change is an abrupt one and affords further evidence that the epithelial changes of vitamin A deficiency are primary and not of nervous origin, particularly as Zimmerman and Cowgill⁸² failed to restore function to the nervous system by administering carotene, while all other manifestations of the consequences of their vitamin A deficient diet were cured.

The changes in the repair of epitheliums after vitamin A deficiency have their normal counterpart in changes in the vagina of rodents during the part of the estrous cycle in which the cornified vaginal epithelium returns to the mucous type.

87. Eveleth, D. F., and Biester, H. E.: The Significance of Myelin Sheath Degeneration and Its Relation to Incoordination, *Am. J. Path.* 13: 257 (March) 1937.

88. Swank, R. L., and Davenport, H. A.: Marchi's Staining Method: Studies of Some of the Underlying Mechanisms Involved, *Stain Technology* 9: 11 (Feb.) 1934.

89. Wolbach and Howe, footnotes 56 and 58. Blackfan and Wolbach.⁶¹

90. Goettsch, Marianne, and Pappenheimer, A. M.: Nutritional Muscular Dystrophy in the Guinea Pig and Rabbit, *J. Exper. Med.* 54: 145 (Aug.) 1931.

91. Rogers, W. M.; Pappenheimer, A. M., and Goettsch, Marianne: Nerve Endings in Nutritional Muscular Dystrophy in Guinea Pigs, *J. Exper. Med.* 54: 167 (Aug.) 1931.

92. Hale, Fred: The Relation of Vitamin A to Anophthalmos in Pigs, *Am. J. Ophth.* 18: 1087 (Dec.) 1935.

93. Harris, L. J.: Vitamins, in *Annual Review of Biochemistry*, Stanford University, Calif., Stanford University Press 3: 275, 1934.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION
OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

GODSEND HEARING AID NOT ACCEPTABLE

Manufacturer: Godsend Hearing Aid Company, 4204 Davis Lane, Cincinnati.

The Godsend Hearing Aid consists of the following parts: (1) a microphone transmitter of the carbon ball type housed in a brown molded bakelite case, weight 59 Gm.; (2) a magnetic midget type air conduction receiver of the direct current excitation type, weight 10 Gm.; (3) a bone oscillator in a laminated bakelite case with spring head band, weight 28 Gm.; (4) a carbon particle amplifier housed in a bakelite case containing a current varying rheostat, the housing fitted with pins for plugging directly into a battery jack, weight 60 Gm., and (5) a bakelite battery case accommodating three ordinary flashlight cells, weight 56 Gm. without battery. In addition, there are the usual connecting cords.

The unit was investigated by a consultant appointed by the Council. He pointed out certain faults in the mechanical construction and performance of the hearing aid. The design of the microphone transmitter is clumsy and bulky; the rheostat arm mounted in the amplifier case is made of thin sheet metal, easily deformed by accident and uncertain in operation. This frail lever might easily be rendered inoperative in any position as the result of pressure of the clothes. In the model submitted, the arm did not make contact over the middle range of the rheostat. Also the air conduction receiver is faulty in that the ear piece (which does not conform to the contours of the ear but merely terminates in a bulb) fits rather loosely in the receiver, so that the two may fall apart.

Performance tests showed that the current drain of the Godsend Hearing Aid was exceptionally high. Thus, with three new cells delivering 4.5 volts at the terminals, the set with rheostat full on draws more than 220 milliamperes; even when only two cells are used with 3 volts the drain is more than 140 milliamperes. The high current drain resulted in the very rapid exhaustion of the three flashlight cell battery furnished with the instrument. Consequently the tests for amplification and intelligibility were conducted with large dry cells capable of maintaining their terminal voltages constant under the large current drain. It was further observed that the hearing aid was unstable, owing to self oscillation, when operated with three new dry cells and the rheostat full on.

Intelligibility and loudness gain tests were performed. For the apparatus in question, it was found that increasing the loudness by moving the rheostat arm toward the full-on position resulted in a severe loss of intelligibility. Indeed, even when the battery current was cut down to 60 milliamperes as against a maximum value of 220 the intelligibility was not greater than 80 per cent. With this low setting it is very difficult to transmit single unfamiliar names over the instrument and its rating for this purpose is not greater than 30 per cent. The loudness gain, moreover, for this setting is approximately 8 decibels (average of four observers). The largest loudness gain observed was for maximum rheostat setting and averaged 23 decibels, but under these circumstances the intelligibility was practically zero; certainly the instrument was unusable.

When the apparatus was examined for bone conduction oscillation, similar results were obtained.

Exaggerated and misleading claims are made in the advertising matter. These claims, as noted later, suggest that the ideal hearing aid has been found. This is certainly incompatible with facts in the hearing aid research. Excerpts from a pamphlet entitled "Joyful News for the Deaf" follow: "Great happiness awaits you," "the principle of the Godsend Hearing Aid has turned a silent, cold, lonely world into a paradise," "restores normal hearing," "easier to adjust and take on and off than a pair of gloves," "you may obtain instant relief from

deafness," "most improved type of hearing aid which leading ear specialists approve and recommend," "ready to bring you good hearing immediately after you take it out of the box" and "open the door to the happiness that normal hearing can bring you."

A leaflet, "Here's Sensational, History-Making News," contains the same type of exaggerated claims. Quotations follow: "Now, even those who have considered themselves hopelessly deaf—totally cut off from the world of conversation . . . may HEAR again," "overcome the obstacle of advanced hearing defect" and "it is possible to hear . . . where even people with normal hearing must frequently strain to understand."

The name "Godsend Hearing Aid" is compatible with the firm's grandiose claims, but the Council does not consider the name an appropriate one for an instrument of this sort.

In view of the foregoing report, the Council on Physical Therapy voted not to accept the Godsend Hearing Aid for inclusion in its list of accepted devices, since it is an inferior instrument, faulty in mechanical construction and a poor acoustic amplifier. It is apt to be of little, if any, use to a person with defective hearing. In addition, the advertising matter contains many exaggerated or misleading claims, as aforementioned.

ELECTRO-EAR AND ROSETTE MODEL HEARING AIDS NOT ACCEPTABLE

Manufacturer: American Earphone Company, 10 East Forty-Third Street, New York.

The Electro-Ear and the Rosette Model of the Electro-Ear are battery operated hearing aids. The Electro-Ear consists of two parts, an earpiece fitting directly into the ear and a small case with self-contained microphone and battery. Either two or three ordinary flashlight batteries supply the current, 3 or 4½ volts. A slide switch on top of the case provides volume control.

In the Rosette Model the microphone and transmitter are separate. This model is available for air conduction with or without mechanical amplification and amplified bone conduction. The mechanical amplifier fits on top of the battery. Single or double transmitters may be employed. Current may be supplied by 3 or 4½ volt batteries.

The discrete sentence intelligibility test was adopted by the Council as being the most suitable method of determining the usefulness of a carbon microphone hearing aid. This test gives an index or figure of merit which permits comparison between various instruments and at the same time rates or scales them in relation to a theoretically perfect instrument.

Briefly, the intelligibility test is conducted as follows: A number of relatively short and simple statements (usually 100) are read before the microphone of the hearing aid and the listener repeats each sentence as he hears it. If he interprets 90 per cent of 100 statements correctly, the hearing aid is given a 90 per cent intelligibility rating. Obviously, the rating will vary with several factors unrelated to the hearing aid, such as the type and degree of the hearing loss of the individual using the instrument, the voice quality of the speaker, the distance of the speaker from the microphone, and the acoustic properties of the room in which the speaker and microphone are located.

In the testing of these instruments, the investigator's voice was used throughout with the normal conversational tone and loudness, the mouth being six feet distant from the microphone. The speaker was in one room with the microphone, and the listener in an adjacent room. A piece of metal tubing about three inches in diameter and a foot in length extended through the brick wall of one room into the other. The cords of the microphones were wrapped in felt and run through this tubing, which was then packed tight with felt to minimize the loudness of the speaker's voice in the listener's room. A high quality microphone was also placed in the listener's room and connected through the pipe to an amplifier and reproducer before the speaker so the responses of the listener could be determined. Two normal and two hard-of-hearing persons

cooperated in the testing. The normal persons could just hear the speaker's voice but not sufficiently well to understand any of the sentences without the assistance of one of the aids. The speaker adjusted the setting of the volume controls on the microphones of the hearing aids to the intensity level preferred by each person, determined by practice sentences.

In the accompanying table, listeners W and X had normal hearing, Y had an approximately uniform hearing loss of 30 decibels from 64 to 8,192 cycles, and Z had a uniform loss of approximately 45 decibels over the same frequency range. Y had normal bone conduction, while the bone conduction of Z was slightly below normal.

Hearing aid I is the Electro-Ear instrument with small battery contained within the microphone case. Hearing aid IIA is the Rosette model employing air conduction without the amplifier attached; IIB is the same instrument with the amplifier, and IIC is the same unit equipped for amplified bone conduction, these being the various ways to assemble or hook up the components of the Rosette model. It was necessary to use the mechanical amplifier (the accessory fitting on top of the battery) with the bone conduction receiver in order to obtain maximum volume.

These data compare favorably with the results obtained from the same listeners with three other well known makes of hearing aids, each tested with amplified air and bone conduction, the medium pitched receivers being used when a choice was available.

Results (Stated in Percentage of Intelligibility)

	I	IIA	IIB	IIC
W (normal).....	93%	90	88	85
X (normal).....	90	91	86	83
Y (30 db. loss).....	91	87	86	84
Z (45 db. loss).....	*	*	83	79

* This person's loss was too great to obtain much value with unamplified air conduction under the test conditions.

Some hard-of-hearing persons cannot obtain worthwhile benefit from any type of portable hearing aid. If the performance of these instruments is unsatisfactory, the firm states in its advertising matter that the purchase price will be refunded, less a small fee for trial (coverage).

The instruments look durable but each of the models has a possible weakness. In the Electro-Ear the cord from the case to the earpiece may be protected against wear and friction by a rubber grommet or some such protective device at the point where the cord passes out through the case. It also seems that the resistance wire of the volume control of the Rosette Model should be enclosed so that it would not be exposed to dirt and dust.

The advertising matter put out with these units contains objectionable or misleading statements. One piece, "All Modern Hearing Devices," states that these instruments are "individually suited to every degree of deafness." This statement should be deleted or evidence submitted to support it. It is noted that several hearing devices are advertised which have not been submitted to the Council for consideration, notably "Twin-Fone," "Super-Ear" and "Vibratube."

In view of the foregoing report, the Council on Physical Therapy voted not to accept the Electro-Ear and Rosette Model of the Electro-Ear hearing aids for inclusion in its list of accepted devices because the advertising matter contains misleading or objectionable statements and, further, each unit has certain deficiencies in construction as pointed out in this report. In addition, the Council believes that these units will be of benefit only to persons with slight impairment in hearing.

The foregoing report was submitted to the firm with a statement to the effect that the Council would reconsider the unit without prejudice, provided the firm improved the construction of the hearing aid and revised the advertising matter.

Ample time was given the firm to submit the improved models and the revised advertising. The new equipment and revised advertising matter have not been received.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

EPHEDRINE SULFATE-LILLY (See New and Non-official Remedies, 1938, p. 228).

The following dosage form has been accepted:

Ampoules Ephedrine Sulfate-Lilly, 1 cc., 0.025 Gm. ($\frac{3}{8}$ grain).

ANTIPNEUMOCOCCUS SERUM TYPES IV AND VIII COMBINED.—An antiserum containing antibodies of both types IV and VIII pneumococci (*Diplococci pneumoniae*).

Dosage.—Intravenously, first dose, 10,000 units of each type, followed by a second dose of from 20,000 to 40,000 units of each type one and one-half hours later; when indicated, the second dose may be repeated at two hour intervals.

Lederle Laboratories, Inc., Pearl River, N. Y.

Antipneumococcus Serum, Types IV and VIII, Refined and Concentrated.—Prepared by immunizing horses with intravenous injections of cultures of type IV and type VIII pneumococci. When test bleedings show the serum to have reached a sufficient degree of potency the horses are bled aseptically and the serum refined and concentrated by means of the ethyl alcohol precipitation method described by Lloyd D. Felton (*J. Immunol.*, November 1931, p. 347). The usual sterility tests prescribed by the National Institute of Health are carried out and safety tests are made by injection into white mice and guinea pigs. The potency tests are based on the method described by Lloyd D. Felton (*J. Infect. Dis.*, December 1928, p. 531). The potency of the preparation is expressed in terms of the unit developed by Felton (*Boston M. & S. J.*, May 15, 1924, p. 819; *J. Infect. Dis.*, September 1925, p. 199, October 1925, p. 309) and used by Park. The unit is based on the smallest amount of antibody that will protect against one million fatal doses of virulent type IV and VIII culture. In actual laboratory practice a carefully standardized control serum is used in each test as a basis of comparison. The procedure for the mouse protection potency test for both type IV and VIII antibody is exactly similar to that described for type I antibody (*J. Immunol.*, July 1932, p. 91). Marketed in packages of one vial containing 10,000 units each of types IV and VIII and in packages of one vial containing 20,000 units each of types IV and VIII. Each package contains a vial of normal horse serum (1:10 dilution) for the conjunctival test.

ANTIPNEUMOCOCCUS SERUM TYPES V AND VII COMBINED.—An antiserum containing antibodies of both types V and VII pneumococci (*Diplococci pneumoniae*).

Dosage.—Intravenously, first dose, 10,000 units of each type, followed by a second dose of from 20,000 to 40,000 units of each type one and one-half hours later; when indicated, the second dose may be repeated at two hour intervals.

Lederle Laboratories, Inc., Pearl River, N. Y.

Antipneumococcus Serum, Types V and VII, Refined and Concentrated.—Prepared by immunizing horses with intravenous injections of cultures of type V and type VII pneumococci. When test bleedings show the serum to have reached a sufficient degree of potency the horses are bled aseptically and the serum refined and concentrated by means of the ethyl alcohol precipitation method described by Lloyd D. Felton (*J. Immunol.*, November 1931, p. 347). The usual sterility tests prescribed by the National Institute of Health are carried out and safety tests are made by injection into white mice and guinea pigs. The potency tests are based on the method described by Lloyd D. Felton (*J. Infect. Dis.*, December 1928, p. 531). The potency of the preparation is expressed in terms of the unit developed by Felton (*Boston M. & S. J.*, May 15, 1924, p. 819; *J. Infect. Dis.*, September 1925, p. 199, October 1925, p. 309) and used by Park. The unit is based on the smallest amount of antibody that will protect against one million fatal doses of virulent type V and VII culture. In actual laboratory practice a carefully standardized control serum is used in each test as a basis of comparison. The procedure for the mouse protection potency test for both type V and VII antibody is exactly similar to that described for type I antibody (*J. Immunol.*, July 1932, p. 91). Marketed in packages of one vial and in packages of one syringe containing 10,000 units each of types V and VII; also in packages of one vial and in packages of one syringe containing 20,000 units each of types V and VII. Each package contains a vial of normal horse serum (1:10 dilution) for the conjunctival test.

PHENOBARBITAL SODIUM-ABBOTT (See New and Nonofficial Remedies, 1938, p. 125).

The following dosage form has been accepted:
Tablets Phenobarbital Sodium-Abbott, 1 grain.

RINGER'S SOLUTION (See New and Nonofficial Remedies, 1938, p. 357).

Ringer's Solution. Each 100 cc. contains sodium chloride 0.7 Gm., potassium chloride 0.03 Gm. and calcium chloride 0.025 Gm. Marketed in bottles of 500 and 1,000 cc.

Prepared by the Abbott Laboratories, North Chicago, Ill.

SULFANILAMIDE (See New and Nonofficial Remedies, 1938, p. 450).

Pulcoids Sulfanilamide, 5 grains.
Prepared by the Drug Products Company, Inc., New York. No U. S. patent or trademark.

Sulfanilamide Tablets, 5 grains.
Prepared by Sharp & Dohme, Philadelphia and Baltimore. No U. S. patent or trademark.

DEXTROSE (See New and Nonofficial Remedies, 1938, p. 162).

The following dosage form has been accepted:

The Abbott Laboratories, North Chicago, Ill.

Dextrose 10% in Ringer's Solution: Each 100 cc. contains dextrose, U. S. P., 10 Gm., sodium chloride 0.7 Gm., potassium chloride 0.03 Gm. and calcium chloride 0.025 Gm. Supplied in bottles containing 500 and 1,000 cc.

VIOSTEROL IN OIL (See New and Nonofficial Remedies, 1938, p. 482).

Viosterol (A. R. P. I. Process) in Oil-Lederle.—A brand of viosterol in oil-N. N. R.

Manufactured by the American Research Products, Inc., a division of General Mills, Inc., Minneapolis, under license agreement with E. I. du Pont de Nemours Co. (Lederle Laboratories, distributor). U. S. patent applied for.

Viosterol (A. R. P. I. Process) in oil-Lederle is prepared by activation of ergosterol through the action of low speed electrons by suitable controlled electrical means. The activated ergosterol is dissolved in bland vegetable oil biologically assayed and adjusted to have the potency of viosterol in oil-N. N. R.

Council on Foods

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COUNCIL ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION AND WILL BE LISTED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED.

FRANKLIN C. BING, Secretary.

H & H BRAND PURE PRUNE JAM

Manufacturer.—Max Ams, Incorporated, New York.

Description.—Prune preserve made from dried prunes and cane sugar.

Manufacture.—Selected sun-dried California prunes are subjected to steam in a pressure cooker to soften them, pitted and cooked with 15 per cent solution of cane sugar. The jars are filled with the mixture at 88 C.

Analysis (submitted by manufacturer).—Moisture 42.1%, total solids 57.9%, soluble solids 56.5%, ash 1.1%, fat (ether extract) 0.2%, protein (N \times 6.25) 1.6%, sucrose 2.9%, reducing sugars as dextrose 37.3%, reducing sugars as invert sugar 38.9%, crude fiber 1.1%, carbohydrates other than crude fiber (by difference) 53.9%.

Calories.—2.24 per gram; 64 per ounce.

BRADWAY CHOCOLATE FLAVORED SYRUP

Manufacturer.—The Bradway Chocolate Company, Inc., New-castle, Ind.

Description.—A beverage base consisting of sucrose, water, tapioca, flour, cocoa and chocolate, salt, artificial flavoring and tartaric acid.

Manufacture.—Cane sugar and water are mixed, constantly agitated while being heated in a steam jacketed copper kettle to 104 C. for twenty minutes to promote inversion and cooled to 88 C. Formula proportions of the remaining ingredients are added. The mixture is stirred, homogenized at 2,500 pounds pressure, filled into five-gallon pails and sealed at 71 C.

Analysis (submitted by manufacturer).—Moisture 19.6%, total solids 80.4%, ash 1.6%, fat (ether extract) 4.7%, protein (N \times 6.25) 2.8%, sucrose 25.4%, reducing sugars as invert sugar 30.9%, crude fiber 0.5%, carbohydrates other than crude fiber (by difference) 70.8%, caffeine* 0.055%, theobromine 0.21%.

Calories.—3.37 per gram; 96 per ounce.

* Calculated from an analysis of cocoa and chocolate.

GLORY WHEAT CREAM FARINA

Manufacturer.—The Teichgraber Milling Company, Gypsum, Kan.

Description.—Purified wheat middlings or endosperm.

Manufacture.—Selected winter wheat is cleaned, scoured, tempered and milled in the usual manner. The purified middlings are separated by the usual process of sifting and aspirating and are automatically packaged and weighed.

Analysis (submitted by manufacturer).—Moisture 12.5%, total solids 87.5%, ash 0.4%, fat (ether extract) 0.8%, protein (N \times 5.7) 12.3%, crude fiber 0.2%, carbohydrates other than crude fiber (by difference) 73.8%.

Calories.—3.52 per gram; 100 per ounce.

NUTRADIET FRESH GREEN BABY LIMA BEANS PACKED IN WATER

Distributor.—The Nutradiet Company, a subsidiary of S & W Fine Foods, Inc., San Francisco.

Description.—Canned green baby lima beans packed in water without added sugar or salt.

Manufacture.—Henderson Bush Lima Beans grown within 2 to 5 miles of the cannery are harvested with vines intact and the beans are removed from the vines at the plant, shelled, cleaned with screens and blowers, graded, blanched, cooled in a spray washer and filled into cans. Water is added. The cans are exhausted, sealed and processed for twenty-five minutes at 121 C. and cooled. No insecticide spray is used on the beans, which are canned in from two to six hours after being harvested.

Analysis (submitted by manufacturer).—Moisture 80.9%, total solids 19.1%, ash 0.7%, fat (ether extract) 0.3%, protein (N \times 6.25) 4.7%, crude fiber 1.0%, carbohydrates other than crude fiber (by difference) 12.4%.

Calories.—0.51 per gram; 14 per ounce.

Claims of Manufacturer.—For use in special diets in which sugar or salt is proscribed or in quantitative diets of calculated composition.

GLORY WHOLE WHEAT

Manufacturer.—The Teichgraber Milling Company, Gypsum, Kan.

Description.—A precooked whole wheat breakfast cereal.

Manufacture.—Selected durum wheat is cleaned, mixed with formula proportions of water and salt and cooked under pressure for about ten minutes. When the desired pressure has been reached, it is suddenly released and the wheat is expelled into a screened bin to allow expansion. The product is then screened and dried to between 7 and 8 per cent of moisture content and packaged in moisture proof cellophane bags.

Analysis (submitted by manufacturer).—Moisture 7.4%, total solids 92.6%, ash 1.7%, fat (ether extract) 1.3%, protein (N \times 5.7) 15.3%, crude fiber 0.8%, carbohydrates other than crude fiber (by difference) 73.5%.

Calories.—3.67 per gram; 104 per ounce.

MRS. PALEY'S BABY FOOD—STRAINED SPINACH

Manufacturer.—Paley-Sachs Food Company, Houston, Texas.

Description.—Canned, cooked sieved spinach, slightly seasoned with salt.

Manufacture.—Fresh spinach is trimmed, inspected, thoroughly washed, precooked for five minutes, strained, filled into glass jars, vacuum sealed and heat processed.

Analysis (submitted by manufacturer).—Moisture 92.0%, total solids 8.0%, ash 1.7%, fat (ether extract) 0.3%, protein (N \times 6.25) 2.1%, reducing sugars as dextrose—trace, sucrose—trace, crude fiber 0.8%, carbohydrates other than crude fiber (by difference) 3.1%, calcium (Ca) 0.1%, phosphorus (P) 0.046%, iron (Fe) 0.003%.

Calories.—0.2 per gram; 6 per ounce.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JUNE 18, 1938

DEPOSITION OF LIPIDS IN THE LIVER

Investigations have established the essential role of the liver for maintaining the life processes. The clear-cut results of hepatectomy and other experimental procedures leave little doubt that this organ is essential for the normal metabolism of the three so-called proximate principles the proteins, the carbohydrates and the lipids. Of the transformations occurring in the liver both under normal and under pathologic conditions, the alterations in lipid content are most striking. It is relatively simple to produce an increase in the quantity of liver lipids in normal animals by administration of diets containing either a high cholesterol or a high fat content. The ease with which this is produced makes available a ready means of determining experimentally the factors which may influence the deposition of lipids in the liver. The role of choline in this connection has already been discussed in these columns.¹ More recently, experimental evidence has accumulated to suggest the importance of endocrine influence in regulating the quantity of liver lipids.

The development of modern knowledge regarding the role of the anterior pituitary gland in lipid metabolism owes much to the investigations of Burn and Ling,² who demonstrated that the injection of certain extracts of the anterior pituitary gland produces an increased excretion of ketone bodies in rats consuming a fat-rich diet. Subsequent studies have confirmed this observation and have served to emphasize the importance of the anterior pituitary gland in the regulation of the rate of lipid metabolism and in the mobilization of the lipids from the body stores to organs, such as the liver, actively concerned in the utilization of this foodstuff. The detailed investigations of Best and Campbell³ have made available interesting experimental data regarding the factors influencing the deposition of lipids in the liver. The daily injection of suitable extracts of the anterior lobe of the pituitary

produced in rats, guinea pigs and mice a rapid increase in size and a marked fatty infiltration of the liver within a few days of the first injection. The increase in size and weight was due chiefly to deposition of fat and water and was accompanied by a decrease in total body fat and an increased excretion of ketone bodies. Although there was some species variation in the degree of the response to anterior pituitary extract, the results in general were similar. The extent of the fat deposition in the liver is in some instances almost as great as that which can be regularly produced by the other methods; e. g., by feeding fat or cholesterol. However, in contrast to the inhibiting action of choline on the deposition of lipids in the livers of animals ingesting a high fat diet, this nitrogenous base did not prevent the increase in liver fat produced by large doses of the anterior pituitary preparation.

These investigations confirm the numerous reports now available indicating the profound influence of the anterior pituitary gland on the processes of intermediary metabolism. Although the best available extracts are still crude, at least in a chemical sense, clinical administration of such anterior pituitary preparations which undoubtedly contain this fat mobilizing and ketogenic principle have already been made, sometimes in considerable doses. In view of the rapid deposition of lipids produced in the livers of experimental animals by the injections of these extracts, caution should be exercised in employing anterior pituitary therapy in unrestricted quantities in treating human patients until further chemical fractionation has been accomplished.

ARMY MEDICAL MUSEUM AND LIBRARY

Congress has passed the bill authorizing the construction of a new building for the Army Medical Library and Museum. At last the world's mightiest collection of medical literature and one of the largest of medical museums will be given adequate quarters.

Fifty-five years ago¹ a committee of the American Medical Association composed of three of America's greatest medical men made a study of the needs of the Army Medical Museum and Library for a building. The committee was composed of Dr. Samuel D. Gross of Philadelphia, the leading surgeon of his day, Dr. Austin Flint of New York, one of the greatest American diagnosticians, and Dr. Oliver Wendell Holmes of Boston, the "Autocrat of the Breakfast Table." The books of the Surgeon General's Library, as it was then called, were stored in Ford's Theater, the scene of President Lincoln's assassination. The specimens of the Army Medical Museum were likewise in storage, and not even in one place. The library then contained 70,000 volumes and 66,000 pamphlets. The museum had some 20,000 specimens. There were 117 medical

1. Choline and Fat Metabolism, editorial, J. A. M. A. 106:1201 (April 4) 1936.

2. Burn, J. H., and Ling, H. W.: J. Physiol. 69:xix (May 31) 1930.

3. Best, C. H., and Campbell, J.: J. Physiol. 86:190 (Feb.) 1936; 92:91 (Feb.) 1938.

1. Minutes of the American Medical Association at Its 34th Annual Session, Held in Cleveland, Ohio, June 5, 6, 7, 8, 1883, J. A. M. A. 1:3 (July 14) 1883.

journals published in the country. The *Index Medicus* was not yet four years old. The *Index Catalogue* had not yet advanced beyond the stage of the *Specimen Fasciculus*. John Shaw Billings had been librarian for eighteen years. Congress, duly impressed with the need for a building, made the necessary appropriation. The present well known red brick building that has housed the Army Medical Library for more than half a century resulted from this action.

Library buildings, particularly those built fifty years ago, had no provisions for expansion. Even the beautiful building of the Library of Congress has been outgrown and additions are now in progress. Under the administration of the Medical Department of the Army, the Army Medical Library and Museum have grown steadily until they are now the largest institutions of their kind in America, and probably in the world. The old building is full to overflowing, and the engineers permit no more books to be placed in the stacks except by removal of old volumes to make way for the new. Every nook and cranny is filled with precious volumes. In the museum too the saturation point is almost reached. The Army Medical Library has grown to a million items. The museum has 60,000 specimens and half a million microscopic slides, besides 67,000 negatives of pathologic material. The library subscribes to 2,000 medical journals. Now it is time for history to repeat itself. The American Medical Association played a great part in obtaining the legislation for the old building and contributed with equal force in obtaining the new. At the hearings of the committee in Congress a representative of the Association officially endorsed the movement by authority of the House of Delegates. Other distinguished medical men gave evidence, and letters from more than a hundred more were presented. The medical profession may congratulate itself on the enactment of the bill to authorize the new building.

But this is not enough. Under our legislative procedure the appropriation called for by the authorization bills must be obtained. The Committee on Appropriations of the Senate and House of Representatives will shortly consider this. If we want the new building built now—and the need is nothing less than urgent—we must let our representatives in both houses of Congress know of our desire. The foundation for the building is already laid: not the foundation of stones and mortar but that of Congressional approval. The Army has done its part—we should do ours. This is the national medical library and museum. The Army Medical Department, which conceived them, has administered them for a century, but always with the full knowledge of all concerned that they are at the service of the whole profession. The Army Medical Library and Museum have been efficiently administered all these years, and to the entire satisfaction of the American medical and allied professions. They should continue under control of the Army Medical Department. The service of the sisters—the library and the

museum—has been the more effective because of their intimate association. Let us uphold the hands of the Surgeon General of the Army in this and, in gratitude for what the Army Medical Library and Museum have done for us, cooperate in every way in securing adequate quarters for our two great scientific institutions. Thus we shall serve well the medical profession of today and of tomorrow.

BRONCHOSPIROMETRY

Before the twentieth annual meeting of the American Association for Thoracic Surgery at Saranac Lake, N. Y., last year, Jacobæus¹ of Stockholm presented a bronchoscopic method for determining the size and function of the lung. The method enables determination of the vital capacity, the reserve air and the residual air of each lung. The oxygen intake and the carbon dioxide output may be determined for a unit of time. Earlier attempts to separate the respired air from each lung were concerned chiefly with animal experiments and were based on the principle advanced by Pflüger in 1870. In his technic a catheter, supplied with a distensible rubber cuff at its distal end, was passed into each of the two main bronchi. The experiment called for a performance of a preliminary tracheotomy and the introduction of cannulas, the breathing being recorded on separate spirometers. For obvious reasons this experiment was not applicable to man. In 1932 Jacobæus conceived the idea of separating the air from each lung with the aid of a bronchoscope. At his suggestion a double bronchoscope was devised, one stem of which with a rubber cuff attached is fixed in one of the main bronchi, the other in the trachea, the latter stem thus conveyed the air from the other lung. The proximal ends of the bronchoscope are connected with a double spirometer whereby the curves are simultaneously recorded from the two lungs separately.

The method is apparently harmless, since no severe accident was recorded among the 300 patients in whom bronchospirrometry was practiced by Jacobæus and Björkman. The cases examined included lung tumors, bronchiectasis and postpneumonic conditions. For tuberculous patients these authors regard a recent hemoptysis as the only contraindication.

Bronchospirrometry, when compared with other physical methods of examination, particularly roentgenologic examination, presents certain definite advantages. Jacobæus cites two cases of artificial pneumothorax to show how enormously the function may vary in spite of the fact that on roentgenologic examination the two lungs did not show great difference and that the one with the worse function proved to be the better aerated. Bronchospirrometric studies in patients on whom a thoracoplasty was performed demonstrated that the operation need not destroy the function of the collapsed

1. Jacobæus, H. C.: Bronchospirrometry: A Review of Present Experiences and Some Further Investigations, *J. Thoracic Surg.* 7: 235 (Feb.) 1938.

lung forever and that a certain amount of return of the function may take place. The method likewise demonstrated that the healthy lung in thoracoplasty diminishes in volume because of the displacement of the mediastinum.

Jacobæus made the interesting observation that it is the healthy lung that brings about the violent expiration which constitutes the cough. The affected lung takes little or no share in coughing. In other words, the lung that is most in need of emptying its secretion has the least chance to do so. The sputum in such cases must first pass the bifurcation before being brought up by coughing.

The method appears to be particularly valuable in cases in which there is a question of operative intervention for bilateral lesions. It permits determination of the function of a lung and the indications and contra-indications for operation.

Current Comment

SOURCE OF TYPHOID IN CITIES

In a case of typhoid recently reported in San Francisco it was determined that the patient had crossed the country from Boston by motor, beginning this journey exactly sixteen days before the onset of symptoms in San Francisco. The health commissioner of San Francisco wrote promptly to health departments in Massachusetts, New York, Indiana, Illinois, Ohio, Iowa, Nebraska, Wyoming, Utah, Nevada and California, outlining the trip which the patient had taken. Information was received from Indiana that several cases of typhoid had been traced to the place where the California patient had eaten a meal. Information was received from the board of health in Chicago stating that six cases of typhoid had been reported to the board in persons who had traveled on the bus lines between Chicago and the East. Typhoid therefore can become rapidly and widely disseminated today from a small focus because of new methods of transportation.

PNEUMOCONIOSIS AND PULMONARY CARCINOMA

Contrary to widespread clinical belief, industrial dust does not appear to be an etiologic factor in pulmonary carcinoma unless such dust contains recognized carcinogenic substances, such as radium or tar. In order to test the correlation between inhaled dust and primary neoplasm of the lungs, Vorwald and Karr¹ of the Trudeau Foundation, Saranac Lake, N. Y., assembled all available roentgenographic data. Of the 57,000 cases thus far reported, roentgenologic evidence suggested primary pulmonary tumor in but three, an incidence of 0.005 per cent. Of 1,357 cases of silicosis studied in their own laboratory, but one case of pulmonary tumor was diagnosed. Of their 14,230 cases in which silicosis was not present, only two presumptive pulmonary tumors were noted. The general

impression from this statistical evidence is that the incidence of pulmonary tumor is perhaps even lower in pneumoconiotic persons than that reported in routine necropsies of the general population. This roentgenologic evidence was supplemented by detailed necropsies from 3,739 cases collected from the world literature and 178 from their own laboratories. There were but thirty-two cases in the combined series showing primary malignant changes in the lungs. This suggests an average incidence of about 0.8 per cent. The statistical evidence was further supplemented by a study of 3,338 laboratory animals exposed for periods varying from a few months to three years to heavy concentrations of industrial dusts. Guinea pigs, rabbits, chickens, mice and rats were used in these tests. Fourteen different types of industrial dust were tried. Of special interest were forty mice of a known carcinoma-susceptible strain. At necropsy only two pneumoconiotic animals (guinea pigs) showed the presence of pulmonary neoplasm. In both cases the lesions were interpreted as benign adenomas. The authors conclude that inhaled dusts, except those containing recognized carcinogenic substances (e. g., radium or tar) cannot be considered as etiologic factors in the development of primary carcinoma of the lungs.

BIOCHEMICAL METASTASIS IN TUBERCULOSIS

Among the more recent discoveries of immunology no fact is of greater clinical interest than the observation that local tissue specificity is altered in many local pathologic conditions and that the locally formed biochemical abnormalities may be transported to and adsorbed by apparently normal peripheral tissues. Since this phenomenon was first demonstrated in malignant disease, the term "biochemical metastasis" has been proposed¹ to denote this transportation and induction of abnormal immunochemical specificities in apparently normal organs. The latest confirmation is by Dmochowski² of the State Hygienic Institute, Warsaw, who has studied the implanted tissue specificities in cases of chronic tuberculosis. The Polish immunochemist injected rabbits with aqueous, alcoholic and ether extracts of bovine caseous material and thus produced an antibovine serum. This antiserum gave strong precipitin and complement deviation reactions with extracts from both human and bovine tuberculous material but no reaction with similar extracts from normal human tissues. It was apparently "caseation specific." Twelve tuberculous, three chronic suppurative and fifteen nontuberculous, nonsuppurating cadavers were studied by means of this antiserum. Dmochowski found that both the tuberculous tissues and chronic suppurative tissues reacted strongly to the "caseation specific" antibody. Caseation specific reactions were also given by extracts from the apparently normal liver, kidney, spleen and heart muscle of the same cadavers. With few exceptions the nontuber-

1. Vorwald, A. J., and Karr, J. W.: *Am. J. Path.* 14: 49 (Jan.) 1938.

1. Hirsfeld, L.; Halber, W., and Laskowski, J.: *Ztschr. f. Immunitätsforsch.* 64: 61 (Nos. 1 and 2) 1929.
2. Dmochowski, L.: *Ztschr. f. Immunitätsforsch.* 90: 363 (May) 1937.

culous, nonsuppurative cadavers were entirely negative in his control tests. Dmochowski interprets these results as evidence of a wide distribution of degeneration products from caseous and suppuration foci, and the deposit of these degeneration specificities in apparently normal tissues and organs. Other interpretations are, of course, possible.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

CALIFORNIA

Society News.—Dr. Henry W. F. Woltman, Rochester, Minn., will discuss "Postoperative Neuritis" before the San Diego Academy of Medicine June 21.—At a meeting of the San Diego County Medical Society May 24 Dr. Robert W. Lamson, Los Angeles, spoke on "Twentieth Century Auto-Intoxication."—Dr. George D. Huff addressed the San Diego County Obstetrical and Gynecological Society May 25 on "Utero-Salpingoscopy."—Dr. Edwin W. Schultz, Stanford University, addressed the Hollywood Academy of Medicine April 21 on "Property and Nature of Viruses."

Promotions in University Faculty.—The University of California Medical School, San Francisco, announces the following promotions on the faculty, among others:

Dr. Robert S. Stone, to professor of roentgenology.
Dr. John B. de M. Saunders, to professor of anatomy.
Frank W. Allen, Ph.D., to assistant professor of biochemistry.
Dr. Raymond J. Reitzel, to associate clinical professor of medicine.
Dr. John J. Sampson, to associate clinical professor of medicine.
Dr. Stacy R. Mettler, to associate professor of medicine.
Dr. John B. Lagen, to assistant professor of medicine and pharmacology.
Dr. Paul A. Gliche, to assistant professor of psychiatry.
Dr. Laurence Taussig, to associate clinical professor of dermatology.
Dr. Montague S. Woolf, to associate clinical professor of surgery.
Dr. H. Brodie Stephens, to assistant clinical professor of surgery.
Dr. George C. Hensel, to assistant clinical professor of orthopedic surgery.
Dr. Robert C. Martin, to associate clinical professor of otorhinolaryngology.
Dr. Lewis F. Morrison, to associate clinical professor of otolaryngology.

CONNECTICUT

Society News.—Dr. Charles H. Goodrich, Brooklyn, discussed "Public Health and Preventive Medicine in Private Practice" before the Hartford County Medical Association at its recent annual meeting, and Dr. Maurice T. Root, West Hartford, as retiring president spoke on "An Everyday Approach to Some Pressing Medical Problems."

Maternal and Infant Mortality.—The infant mortality rate in Connecticut in 1937 was 40.5 per thousand births as compared with 42.3 in 1936. The total number of deaths was 908. According to the Connecticut *Health Bulletin*, this is a reduction of about 70 per cent since 1901, when the rate was 138 per thousand births. The maternal mortality rate in 1937 was 2.9, a decrease over the rate for 1936 when it was 4.7.

Changes in Health Officers.—The following have been appointed health officers of the places indicated:

Dr. George S. Lambert, Killingly.
Dr. Arthur D. Marsh, Scotland.
Dr. Joseph L. Roy, Thompson.
Dr. Francis Brewer, Brookfield.
Dr. Wilfred J. T. Robinson, East Windsor.
Dr. John H. McLaughlin, Voluntown.
Dr. William L. Higgins, Andover.

FLORIDA

Personal.—Dr. Alvin L. Stebbins, Punta Gorda, has been appointed health officer of Escambia County, succeeding Dr. William H. Pickett, Pensacola, resigned. Dr. Stebbins has recently been health officer of Franklin, Gulf, Liberty and Calhoun counties.—Dr. Haynsworth D. Clark, Fort Pierce, was named president-elect of the Florida Railway Surgeons Association at its annual meeting in Miami and was reelected secretary-treasurer.

Society News.—The Dade County Medical Society was addressed recently by Drs. Warren W. Quillian, Coral Gables, on pediatrics and Herman Boughton, Miami Beach, pneu-

monia.—At a meeting of the Duval County Medical Society in Jacksonville April 5 a symposium on deficiency diseases was presented by Drs. William W. Kirk, Ernest B. Milam and Ferdinand Richards, all of Jacksonville.—The Pinellas County Medical Society was addressed in St. Petersburg April 15 by members of the Hillsborough County Medical Society; the speakers, all of Tampa, were Drs. Henry Mason Smith on "Pituitary Tumor"; Robert G. Nelson, "A Plea for Obstetrics as a Specialty" and James T. Cowart, "Practical Pediatrics."

GEORGIA

Hardman Cup Honor to Dr. Sydenstricker.—The name of Dr. Virgil P. W. Sydenstricker, professor of medicine, University of Georgia School of Medicine, Augusta, will be inscribed on the L. G. Hardman Loving Cup, it was announced at the annual meeting of the Medical Association of Georgia. This honor is awarded annually to the physician considered to have rendered the most distinguished medical service during the previous year. The cup was given to the state medical association by the late Governor Hardman, who was a member of the association for more than fifty years, graduating from the University of Georgia Medical Department in 1876 and Bellevue Hospital Medical College in 1877.

ILLINOIS

Society News.—Dr. George W. Hall, Chicago, addressed the Peoria City Medical Society in Peoria April 19 on "The Relationship Between the Physical and Psychic Disturbances of the Patient." Dr. Harry E. Mock, Chicago, addressed the society April 5 on "Management of Craniocerebral Injuries." Dr. Willis S. Lemon, Rochester, Minn., discussed "The Development and Metamorphosis of the Primary Tubercle" before a recent meeting.—Dr. Quitman U. Newell, St. Louis, discussed "Prolapsus Uteri" before the Adams County Medical Society in Quincy May 9.

Chicago

Capps Prize Awarded.—Dr. Ronald R. Greene has received the Joseph A. Capps Prize of \$500 for 1937 for his work on "Experimental Production of Intersexuality in the Female Rat." Founded by the late Dr. Edwin R. LeCount, the award is made annually by the Institute of Medicine of Chicago for the most meritorious investigation in medicine by a graduate of a recognized medical school in Chicago within two years after the completion of an internship or of one year in laboratory work. Dr. Greene graduated at Northwestern University Medical School, Chicago, in 1935.

Patients with Purpura Haemorrhagica and Polycythemia.—Members of the department of medicine of the University of Illinois College of Medicine are interested in studying patients with purpura haemorrhagica and polycythemia. Physicians are asked to communicate with Dr. Major H. Worthington, superintendent of Research and Educational Hospital, 1819 W. Polk Street, for additional information concerning the free hospitalization of these patients. Case histories of the patients should be sent to the hospital. The service is available only to residents of Illinois.

INDIANA

University News.—The Indiana University School of Medicine, Indianapolis, will receive a bequest of \$5,000 under the will of the late Dr. J. P. Heath, Fishers, newspapers reported recently. Dr. Heath also bequeathed his medical library to the school.

Hospital News.—The new \$250,000 ward building at the Logansport State Hospital was dedicated May 12; it will provide accommodations for 219 mental patients.—The new wing of the Witham Memorial Hospital, Lebanon, was dedicated May 12; 45 per cent of the approximate \$100,000 cost of the unit was paid by the federal government and the balance by Boone County; the hospital now has a capacity of sixty beds.

District Meetings.—A symposium on gallbladder diseases was presented before the Eighth District Medical Society in Muncie May 10 by Drs. Clarence F. G. Brown and John L. Lindquist, Chicago, and Byrl R. Kirklin, Rochester, Minn. Dr. Frank H. Lahey, Boston, was the speaker at the banquet.—Dr. Rettig A. Griswold, Louisville, Ky., addressed the Fifth District Medical Society in Terre Haute May 6 on "Surgical Procedures in Office Practice." This meeting was a joint dinner session with the Vigo County Medical Society, the Terre Haute Academy of Medicine and the Aesculapian Society of the Wabash Valley.—At a meeting of the Sixth District Medical Society in Richmond May 5 the speakers were Drs.

Gerald W. Gustafson, Indianapolis, on "Normal Delivery and Breech Presentation"; Lyman T. Meiks, Indianapolis, "Care of the Newborn and Premature Infant," and Henry Close Hesselstine, Chicago, "Treatment of Hemorrhage of Late Pregnancy."

IOWA

Public Health Meeting.—The twelfth annual meeting of the Iowa Public Health Association was held at the Hotel Fort Des Moines May 10 under the presidency of Dr. William Woodburn, Boone. Out of state speakers included Drs. Allan J. McLaughlin, Ann Arbor, Mich., on "Local Health Organization in Relation to Public Health" and Florian E. Schmidt, Chicago, "Management of the Pneumonias." Dr. Walter L. Biering, Des Moines, state health commissioner, spoke on "Marshaling Health Forces Against Pneumonia."

Twin Lakes District Meeting.—The dry diagnostic clinic and fifteenth annual assembly of the Twin Lakes District Medical Society will be held at Rockwell City High School, Rockwell City, June 23. The speakers on the program will include Drs. Charles T. Obermann, Cherokee, "The Problem Drinker," and James F. Kelly, Omaha, "Some Recent Advances in Radiation Therapy"; others will include Drs. George B. Eusterman, Rochester, Minn.; Rollin Russell Best and William R. Hamsa, Omaha; James H. Bloomfield, Chicago, and Orval R. Withers, Kansas City. The clinics will cover practical surgery, office management of some surgical conditions of the extremities, gynecology, clinical allergy and gastrointestinal malignant conditions. There will also be an after-dinner symposium on medical economics.

Society News.—Dr. Clarence E. Broderick, Cherokee, addressed the Cherokee County Medical Society April 11 on "Interstitial Keratitis of the Cornea."—At a meeting of the Crawford County Medical Society in Denison April 12, the speakers were Drs. Robert D. Schrock, Omaha, on "Fractures of the Lower Third of the Forearm and Wrist" and James W. Graham, Sioux City, "Fractures About the Elbow."—Dr. Goronwy O. Broun, St. Louis, discussed "The Problem of Arteriosclerosis" before the Scott County Medical Society in Davenport April 5.—At a meeting of the Tama County Medical Society in Dysart April 21 Dr. Milo G. Meyer, Marshalltown, spoke on psychoneurosis.—The Four County Medical Society (Allamakee, Clayton, Fayette and Winnebago) was addressed at Postville April 5 by Drs. Arthur B. Hunt and John M. Waugh, both of Rochester, Minn., on sterility and surgery of the female pelvis, respectively.

KANSAS

Medical Books in High School Library.—Fifty-two books on medical and public health were recently placed in the Hoisington High School by the Barton County Medical Society. The books were selected by a committee of the society in cooperation with a local library committee and the cost was defrayed by a bequest in the will of a local citizen. The books were selected from a list prepared by the Kansas Women's Auxiliary.

MAINE

Personal.—Dr. Oscar R. Emerson, Newport, has been appointed a member of the state board of registration of medicine succeeding Dr. Franklin A. Ferguson, Portland, resigned. Dr. Ferguson was also chairman of the board, and a successor will be elected at a meeting in July.

Anniversary of Memorial Library.—The Frederic Henry Gerrish Memorial Library observed its first anniversary with a special ceremony May 26 at the Central Maine General Hospital, Lewiston. The program included clinics, ward walks and a round table discussion by Dr. Reginald Fitz, Wade professor of medicine, Boston University School of Medicine. At the banquet in the evening, Dr. Ralph W. Wakefield, Bar Harbor, president, Maine Medical Association, spoke and Dr. Fitz discussed "The Case of the Forsaken Pamphlet."

Society News.—The Cumberland County Medical Society was addressed April 22 by Dr. Henry R. Viets, Boston, on "Acute Lymphocytic Meningitis and Other Virus Diseases of the Nervous System."—Dr. Samuel H. Proger, Boston, addressed the Kennebec County Medical Association in Gardiner April 21 on "The Heart After Forty." Dr. Ralph W. Wakefield, Bar Harbor, also spoke.—Dr. Arthur W. Allen, Boston, discussed "Peptic Ulcer" before the Penobscot County Medical Association in Bangor April 18.—Dr. Harold E. Pressey, Bangor, discussed "Some Physiotherapy Methods in Modern Medicine" before the Waldo County Medical Society May 26.

MICHIGAN

Graduate Course in Obstetrics.—The federal maternal welfare committee, through the state department of health and the department of graduate medicine, University of Michigan, Ann Arbor, is sponsoring a graduate course in obstetrics at the University Hospital. Two practicing physicians have been appointed for intervals of two weeks during which time they live in Maternity Hospital. The following were appointed by the directors of the Michigan Maternal Welfare Committee: April 18-30, Drs. Clark G. Porter, Traverse City, and Fred E. Murphy, Cedar; May 2-14, Drs. Wesley H. Mast, Petoskey, and Gilbert B. Saltonstall, Charlevoix; May 16-28, Drs. Clarence G. Clippert, Grayling, and Benton A. Holm, Cadillac; May 30-June 11, Drs. Michael R. Murphy, Cadillac, and Raphael W. Albi, Lake City; June 13-25, Drs. Hugh F. Mulenmeister, Bear Lake, and Ernest C. Hansen, Manistee.

Personal.—Dr. Anthony J. J. Rourke, New York, has been appointed assistant director of University Hospital, Ann Arbor, succeeding Mr. George P. Bugbee, who resigned to become superintendent of the Cleveland City Hospital. Dr. Rourke graduated at the University of Michigan Medical School.—Dr. Milton Shaw, Lansing, immediate past president of the Ingham County Medical Society, was recently presented with a silver tray on which was engraved the signature of every member of the society in appreciation of his services.—Life membership in the Bay County Medical Society was conferred on Dr. Charles H. Baker, Bay City, at its meeting May 25. Dr. Baker was president of the Michigan State Medical Society in 1919.—Dr. George C. Stucky, for thirteen years superintendent of the Ingham County Tuberculosis Sanatorium, Lansing, has resigned to work on a rural health project being conducted in seven counties by the W. K. Kellogg Foundation, Battle Creek.—Dr. Wayne S. Ramsey, Harrisburg, Pa., president of the Washtenaw County Medical Society in 1934, is the new secretary of the Michigan Crippled Children Commission.—Dr. Richard M. Johnson, assistant professor of medicine, Wayne University College of Medicine, Detroit, has been appointed medical director of Eloise Hospital, Eloise.

MINNESOTA

Society News.—At a meeting of the Washington County Medical Society, April 12, Dr. Carl L. Larsen, St. Paul, discussed sinus disease.—At a meeting of the Minnesota Academy of Medicine in St. Paul May 11, the thesis of Dr. Emmett V. Kenefick was entitled "Nontuberculous Spontaneous Pneumothorax."

Personal.—Dr. Carl C. Chatterton during April was awarded the International Distinguished Service Medal for 1937 by the Cosmopolitan Club of St. Paul for his work with crippled children at the Gillette State Hospital. The medal is given each year to a resident of the city who during the past twelve months has rendered noteworthy and unselfish civic service without remuneration.

University News.—The board of regents of the University of Minnesota announces a gift of \$10,000 from Mrs. John Dwan, the mother of Dr. Paul F. Dwan of the department of pediatrics, for the inauguration of a serum center at the university. A gift of \$7,300 was also announced from the Citizens Aid Society, Minneapolis, for the purchase of an additional roentgen therapy machine for the Cancer Institute.

NEW HAMPSHIRE

Personal.—At a meeting of the Strafford County Medical Society in Rochester, April 27, the following were made honorary members: Drs. Roscoe G. Blanchard, Dover, Louis W. Flanders, Dover, John H. Bates, East Rochester, and Forrest L. Keay, Rochester. Dr. Samuel F. Marshall, Boston, discussed acute conditions of the abdomen.

Society News.—Dr. Dwight O'Hara, Boston, addressed the Dover Medical Society May 5 on "Scarlet Fever and Streptococci."—At a meeting of the Rockingham County Medical Society at Portsmouth recently Dr. James Sanders, among others, spoke on "Traumatic Injuries of the Extremities."—Dr. Halsey B. Loder, Boston, discussed "Emergency Treatment of Conditions That Arise in General Practice" before the Belknap County Medical Society in New Hampton April 5.

NEW JERSEY

Adler Prize Awarded to Dr. Stanley.—Harvard University, Cambridge, has awarded the Isaac Adler Prize of \$2,000 to Wendell M. Stanley, Ph.D., Rockefeller Institute for Medical Research, Princeton, for his work on the isolation of a

crystallizable factor which has developed a new approach in the study of viruses and stimulated a widespread interest among workers in this field, according to the *New York Times*. The Adler Prize was founded in 1934 by a bequest of \$20,000 made by Mrs. Frida Adler, New York, in memory of her husband. Dr. Stanley was recently awarded the Rosenberger Medal of the University of Chicago for his work on viruses.

Vineland School Fifty Years Old.—The Training School at Vineland, an institution for mentally deficient children, recently celebrated the fiftieth anniversary of its founding. Mr. Edward R. Johnstone has been director since 1900. In 1906 the research laboratory was established with Henry H. Goddard, Ph.D., now of Ohio State University, as the director. Under his direction the Binet intelligence test was first used in the United States, it is said, and it was at Vineland that he produced his book "The Kallikak Family." Edgar A. Doll, Ph.D., is now director of the laboratory. A special study of birth injuries has been made in the past five years with the cooperation of the New Jersey Crippled Children's Commission and the federal Children's Bureau.

NEW YORK

Compulsory Examination for License to Marry.—A law has been enacted requiring a physician's examination and serologic test of each applicant for a marriage license in New York. The law went into effect immediately but is not applicable to marriage licenses issued before July 1.

Society News.—Dr. Charles H. Goodrich, Brooklyn, president of the Medical Society of the State of New York, addressed the Medical Society of the County of Albany April 27 on "Our Position, Our Responsibilities and the Outlook."—Dr. Wilson G. Smilie, New York, addressed the Medical Society of the County of Nassau, Mincola, April 26, on "The Present Day Concept of Public Health."

Outbreaks of Gastroenteritis.—Ninety-four persons were affected in an outbreak of gastroenteritis in East Pembroke, Genesee County, between February 23 and March 7. The illness was traced to a well which supplied water for a school in which most of the cases occurred. The remaining cases were in households near the school which also used the water. Bacteriologic examination showed *B. coli*.—Forty-three out of forty-five persons who attended a church supper in the town of Brasher, St. Lawrence County, March 24, became ill of gastroenteritis.

Conference of Health Officers and Public Health Nurses.—The annual conference of health officers and public health nurses will be held at Saratoga Springs, June 28-30. According to the preliminary announcement, the speakers will include Gov. Herbert H. Lehman, Drs. Edward S. Godfrey Jr., Albany, state commissioner of health; William A. Groat, Syracuse, president of the Medical Society of the State of New York; Ludvig Hektoen, executive director, National Advisory Cancer Council, Washington, D. C.; Paluel J. Flagg, New York, chairman of the committee on asphyxia of the American Medical Association, and Louise Pearce, Princeton, N. J., of the Rockefeller Institute for Medical Research.

New York City

The Graduate Fortnight.—The eleventh annual Graduate Fortnight of the New York Academy of Medicine will be held October 24 to November 4, it is announced. This year's subject will be "Diseases of the Blood and Blood-Forming Organs." All members of the medical profession are invited to attend. Information may be obtained from Dr. Mahlon Ashford, New York Academy of Medicine, 2 East One Hundred and Third Street, New York.

Society News.—At a meeting of the Association for the Advancement of Industrial Medicine and Surgery, Inc., May 18, the speakers were Drs. Arthur M. Master on "Precipitating Factors in Coronary Artery Thrombosis"; Louis Faugeres Bishop Jr., "Cardiovascular Syphilis in Industry," and Abram Wilbur Duryee, "The Peripheral Vascular System."—A symposium on the endocrine glands was presented at a meeting of the International Spanish Speaking Association of Physicians, Dentists and Pharmacists recently by Drs. Frank H. Lahey, Boston; Michael G. Wohl, Philadelphia; Andre Crotti, Columbus, Ohio, and William Seaman Bainbridge.

Dr. Tillett Made Professor of Medicine.—Dr. William Smith Tillett, professor of bacteriology and director of the bacteriologic laboratories, New York University College of Medicine, has been appointed professor of medicine to fill the vacancy created last year by the death of Dr. John Wyckoff. The appointment is effective in the fall. A native of Charlotte,

N. C., Dr. Tillett graduated at Johns Hopkins University School of Medicine, Baltimore; he served overseas during the World War and then joined the staff of the Rockefeller Institute for Medical Research. Prior to his appointment at New York University, Dr. Tillett served as associate professor of medicine and director of the biologic division of the department of medicine at Johns Hopkins.

Library Report.—The annual report of the library of the Medical Society of the County of Kings and the Brooklyn Academy of Medicine shows that 16,570 readers used the library during 1937. The number of books consulted in the library was 64,511 and the number taken home was 12,702. All these figures were increases over the previous year. This library receives support from numerous special societies, some of which use the society's building for their meeting. A number of organizations and individuals present subscriptions to periodicals to the library. The report points to a serious need for expansion of space to accommodate its growing collections. The library purchased 951 volumes, received for review 452 and received as gifts 168. The number of current serial publications received was 1,562.

New York Hospital and Cornell Seek Endowment.—The New York Hospital and Cornell University Medical College began a campaign March 31 for an endowment of \$17,000,000 to enable the institution to use its facilities and enlarge its program of research. It is said that the annual deficit has been reduced by two thirds through careful management, but that further curtailment would impair the service to patients and the facilities for research and education. The present annual operating loss of nearly a million dollars is caused by the free and partly free care of patients, it was said. Urgent requirements of the hospital are additional beds in the department of medicine, initial development of surgical specialties, opening of unused floors and an endowment for the school of nursing. In the college the departments are existing at the lowest level consistent with first class teaching, an announcement said. Last year the hospital cared for 20,000 bed patients and 46,000 in the outpatient department. The total operating expenses for the year were \$3,879,674.86.

NORTH CAROLINA

Health Officer Honored.—Dr. George M. Cooper, assistant state health officer since 1923 and director of the division of preventive medicine and health education, state department of health, Raleigh, was recently presented with a silver letter opener bearing his initials and the dates 1915-1938 by his associates in the division. The gift was in recognition of his service with the state board for twenty-three years.

District Meetings.—The Eighth District Medical Society was addressed in Greensboro April 26, among others, by Drs. Fred M. Patterson, Greensboro, on "Surgery of the Prostate, Preoperative Studies and Preparation"; Robert W. Mathews, Greensboro, "Classification and Mechanism of the Anemias," and Charles L. Haywood Jr., Elkin, "The Erythrocyte Sedimentation Rate in the Acute Abdominal Conditions."—At a meeting of the Fifth District Medical Society in Sanford April 26, the speakers included Drs. Maurice Barnes Woodhall, Durham, on "Diagnosis and Treatment of Acute Head Injuries," and Asa M. Lehman, Fort Bragg, lieutenant colonel, U. S. Army, "Intestinal Obstruction."

NORTH DAKOTA

Personal.—Dr. Clyde E. Stackhouse, Bismarck, has been appointed medical referee of the North Dakota State Board of Public Welfare, succeeding Dr. William H. Bodenstab, Bismarck.—Dr. Oliver S. Craise, Towner, has been appointed superintendent of the McHenry County Board of Health.—Dr. Robert Gillam White, formerly of Ann Arbor, Mich., has been appointed in charge of a new district branch of the North Dakota State Department of Health with headquarters at Valley City.—Dr. Francis Weldon Ford, Minnewaukan, has been appointed health officer of Devils Lake.

PENNSYLVANIA

Personal.—Dr. Edwin A. Nicodemus, who recently retired as chief of the surgical staff of the Harrisburg Polyclinic Hospital, was recently honored with a testimonial dinner at the Hotel Harrisburger by members of the staff.

Society News.—At a meeting of the Lycoming County Medical Society in Williamsport June 10 Dr. Samuel O. Pruitt, Philadelphia, spoke on "Prognosis and Management of the Average Case of Tuberculosis."—At a meeting of the Fayette

County Medical Society in Uniontown June 2, Drs. Harold L. Mitchell, Pittsburgh, discussed mental health problems and Charles H. Henninger, Pittsburgh, mental hygiene activities in Pennsylvania. —The Dauphin County Medical Society, Harrisburg, was addressed June 7 by Dr. John C. Hirst, Philadelphia, on "Maternal and Fetal Complications of Multiple Pregnancies."

TEXAS

State Medical Election.—Dr. Leopold H. Reeves, Fort Worth, was chosen president-elect of the Texas State Medical Association and Dr. Ernst W. Bertner, Houston, was inducted into the presidency. Vice presidents are Drs. Lewis B. Holland, Wichita Falls; James W. Ward, Greenville, and Frederick B. Shields, Victoria. Drs. Holman Taylor and Khleber H. Beall, both of Fort Worth, were reelected secretary and treasurer respectively. The 1939 session will be in San Antonio.

Society News.—Drs. Robert M. Purdie and John R. Phillips, Houston, addressed the Austin County Medical Society, Sealy, recently, on "Indigestion as a Symptom" and "Ulcer and Carcinoma of the Stomach and Duodenum" respectively. —Drs. Charles W. Stevenson and Julius A. Heyman, Wichita Falls, addressed the Childress-Collingsworth-Hall Counties Medical Society, Memphis, recently, on "Gastrointestinal Diagnosis" and "Peritonitis and Its Treatment" respectively. —Speakers at a meeting of the Falls County Medical Society recently were the following from San Antonio: Dr. Lewis M. Helfer, on "Diagnosis of Brain Tumors"; William E. Durbeck, D.D.S., "Fractures of the Jaws" and Dr. John D. Gleckler, "Tic Douloureux." —Drs. Richard B. DeLee, Shreveport, La., and Walter Grady Reddick, Dallas, addressed the Gregg County Medical Society, Longview, March 10, on "Treatment of Hay Fever" and "Use of Sulfanilamide in Internal Medicine" respectively. —A symposium on diseases of the liver was presented before the Tarrant County Medical Society, Fort Worth, March 1, by Drs. Hiram C. Thomas, Clarence C. Garrett, Frank W. Halpin and Charles H. McCollum Jr.

WEST VIRGINIA

Annual Symposium.—The fourth annual symposium, presented by the Golden Clinic, Davis Memorial Hospital, Elkins, will be held June 25. The speakers will include:

- Dr. Harry E. Mock, Chicago, Skull Fracture.
- Dr. George K. Fenn, Chicago, Peripheral Circulatory Failure versus Myocardial Failure.
- Dr. Fred H. Albee, New York, Massive Resection of Bone Sarcoma with Immediate Bone Graft Replacement.
- Dr. Lester Hollander, Pittsburgh, Dermatologic Problems of the General Practitioner.

The West Virginia Heart Association will hold a round table luncheon. Dr. John E. Cannaday, Charleston, will be the toastmaster at the banquet in the evening; the speakers will be Drs. Mock and Albee on "Conservative Treatment of Gallbladder Disease" and "Joint Reconstruction" respectively.

WISCONSIN

Society News.—Dr. Hans Adolph Krebs of the department of pharmacology, University of Sheffield, England, lectured before the University of Wisconsin Medical Society April 25 on "Recent Advances in Intermediary Carbohydrate Metabolism." —The Medical Society of Milwaukee County was addressed May 13 by Drs. Dexter H. Witte on "What Is Socialized Medicine?" and Newell C. Gilbert, Chicago, "Role of the Coronary Circulation in Cardiac Insufficiency." A school of first aid and health was conducted during May by the local chapter of the American Red Cross in conjunction with the first aid committee of the society.

PHILIPPINE ISLANDS

New Officers of Philippine Medical Association.—Dr. Jose C. Locsin, Silay, Occidental Negros, was elected president of the Philippine Islands Medical Association at its thirty-fifth annual meeting in Zamboanga, April 27-29. Vice presidents are Drs. Pedro A. Rodriguez, Zamboanga, and Alberto Tupas, Manila, and Dr. Antonio S. Fernando, Manila, is secretary. The program included the following speakers:

- Dr. Tupas, The Care of the Premature Infant in the Tropics.
- Drs. Mariano C. Icasiano and Florencio Z. Cruz, Manila, The Normal Growth of Filipino School Children.
- Dr. Teofilo S. Morales, Baguio, Artificial Pneumothorax in the Treatment of Lobar Pneumonia.
- Drs. Lucio D. Abad and Manuel C. Maghoo, Manila, Foreign Body in the Frontal Sinus (Spark-Plug of an Automobile) of Fifteen Years' Duration.
- Dr. Antonio Ejercito, Manila, Biological Control of Anopheles.

GENERAL

Campaign Against Fourth of July Accidents.—How to make the Fourth of July safe and sane is the theme of literature now being distributed by the National Society for the Prevention of Blindness in its current campaign to reduce Fourth of July accidents. The material contains suggestions for editorial writers and mothers and includes a reprint of the first annual summary of Fourth of July accidents, published in *THE JOURNAL*, Nov. 27, 1937, page 1806.

Changes in Status of Licensure.—The State Medical Board of Ohio reports the following actions:

- Dr. Phares P. Mauk, Portland, Ore., license revoked recently for violation of the Harrison Narcotic Act.
- Dr. Robert I. McPhail, formerly of Arcadia, license restored January 3; it was suspended in January 1937.

The Texas State Board of Medical Examiners reported the following:

- Dr. Richard Hubbard Lindley, San Angelo, license suspended for two years by order of the district court January 5.

The department of licenses of the state of Washington recently reported the following:

- Dr. Robert William Rose, Davenport, license revoked Dec. 17, 1937, for unprofessional conduct.

Special Society Elections.—At the semicentennial meeting of the American Pediatric Society in Great Barrington, Mass., May 7, Dr. Clifford G. Grulec, Evanston, Ill., was elected president; Dr. DeWitt H. Sherman, Buffalo, vice president, and Dr. Hugh McCulloch, St. Louis, reelected secretary. —Dr. Ernest H. Gaither, Baltimore, was elected president of the American Gastro-Enterological Association at its recent annual meeting and Drs. Irvin Abell, Louisville, Ky., and Andrew C. Ivy, Chicago, vice presidents. Dr. Russell S. Boles, Philadelphia, is secretary. The 1939 session will be held at the Hotel Claridge, Atlantic City, May 1-2. —Newly elected officers of the American Otological Society include Drs. Isidore Friesner, New York, president, and Horace Newhart, Minneapolis, vice president. Dr. Thomas J. Harris, New York, is secretary.

Restrictions Removed from Rockefeller Gifts.—Trustees of the Rockefeller Foundation and the General Education Board, also financed by Rockefeller funds, recently announced that gifts distributed by them are now free from restrictions as to their use for specific purposes. It was pointed out that the new purposes should be as reasonably related to the original purpose as may be found practicable, having regard to intervening changing conditions. The following conditions, however, were made for the change: Ten years after the date of a gift the income may be used for some purpose other than the original one; five years after the date of the gift 5 per cent of the principal may be used each year for any purpose for which the income may then be used; after twenty-five years any part or the whole of the principal may be used for some other purpose. This action was taken in view of the impending liquidation of the General Education Board, it was announced, and uncertainty as to further opportunities for expenditure by the Rockefeller Foundation. The Laura Spelman Rockefeller Memorial and International Education Board have already been merged or liquidated.

Reports of Swindlers.—A man has recently been using the name of Dr. Malcolm T. MacEachern, associate director of the American College of Surgeons, Chicago, to swindle physicians and hospitals, it is reported. This man tells a story of having lost his wallet or having his car broken down and wants to borrow money to get him out of his difficulties. He speaks familiarly of physicians and appears to be well versed in matters pertaining to medicine. He is between 40 and 50 years old, about 5 feet 8 inches tall and weighs about 165 pounds; has a fair complexion, sandy hair; is well groomed and talks rapidly and suavely. It is also reported that persons are visiting hospitals posing as representatives of the American College of Surgeons. One such reported from Waynesburg, Va., gave the name Robert T. Clayton. He also claimed a connection with the American Medical Association. Accredited representatives of these organizations carry identification which they will produce on request. —A Kentucky physician has reported the activities of a man using the name Walter S. Cole, who claims to be an advertising agent. His plan was to solicit physicians to have their names on key tags or cards for hotel rooms as "house physician." This practice is customary in that section, it was said. Mr. "Cole" gave a receipt for payment for handling this service, but when a letter was sent to the address he gave, 1472 Broadway, New York, the letter was returned marked "Fictitious." —A trail of bad checks was recently left in Marseilles, Ill., by a man who

posed as a physician giving the name Dr. George E. Knight, Detroit. He rented an office, ordered an automobile and joined in social activities in the town. He asserted that he had opened an account in Grand Ridge, a neighboring town, but when various persons who had cashed his checks attempted to cash them in Grand Ridge it was found the man had no funds there. He was described as about 35 years old, 6 feet tall, blond and slightly bald. Files of the biographic department and the Bureau of Investigation of the American Medical Association do not show a physician of this name.

CANADA

Personal.—Dr. Brabazon J. Hallowes has been appointed health officer of Alexis Creek.—Dr. Donald H. Williams, Vancouver, has been appointed director of the division of venereal disease control of the department of health of British Columbia.

Banting Chairman of Research Committee.—The National Research Council of Canada has recently appointed a committee to study the organization of medical research in Canada, with Sir Frederick Banting, Toronto, as chairman. The immediate purposes of the committee were stated to be: to receive suggestions for requirements in respect of medical research and in matters related thereto; to consider by whom the investigations required can best be carried out and to make proposals accordingly; to correlate the information when secured and to make it available to those concerned, and to do such other things as the committee may deem advisable to promote research. One of the first steps will be to make a survey of the work in progress at various centers to determine how the activities of the various institutions concerned may be developed to the best possible advantage, according to *Science*. Appointment of the committee was recommended at a nationwide conference held recently in Ottawa and attended by representatives of all the medical schools, organizations and institutions concerned in medical research in the dominion.

FOREIGN

Health Survey in Belgium.—The Health Committee of the League of Nations at a meeting in February agreed to cooperate with the Belgian Ministry of Health in making a survey of health conditions of the population and of the equipment, organization, methods and efficiency of the health services of Belgium. The action was taken in answer to a request of the ministry of health, of which Dr. Rene Sand is secretary general. A committee was appointed to make the survey with Professor Parisot, Paris, as chairman, to make the study early in the summer.

Manson Medal to Sir Leonard Rogers.—The Royal Society of Tropical Medicine and Hygiene presented its Manson Medal to Major General Sir Leonard Rogers, retired, at its annual meeting June 16. The medal is awarded triennially "to the living author of such work in any branch of tropical medicine or tropical hygiene as the council may consider deserving of the honor." Sir Leonard formerly served as president of the society and as professor of pathology at the Medical College, Calcutta. He received the Moxon Gold Medal of the Royal College of Physicians of London and the Fothergillian Gold Medal of the Medical Society of London. He has been a frequent contributor to the literature on tropical medicine.

Government Services

Annual Report of Surgeon General of Navy

The Bureau of Medicine and Surgery of the U. S. Navy in its report for the calendar year 1936 listed 367 deaths from all causes, a rate of 2.95 per thousand. Motor vehicle accidents occupied first place as a cause of accidental death, as it did in 1930, 1931, 1934 and 1935. Previous to 1930, drowning was the leading cause of accidental death.

There were 55,614 admissions for all causes in the calendar year 1936, with a rate of 447.03 per thousand. Fifty-two of the fifty-six deaths and 712, or 88.3 per cent of the admission charged to motor vehicles, were the result of injuries received while the men were on leave or liberty. Of the 806 motor vehicle injuries, 620 were incurred in passenger-carrying automobiles, 112 in motorcycles, fifty-one in trucks and twenty-three in other motor vehicles. There were 1,876 admissions for accidental injuries and poisoning incurred while on leave

or liberty. When considered from the point of view of loss of life or serious injury to naval personnel it can be said that only one disaster occurred during the year 1936. A gun explosion occurred on the U. S. *Marblehead* July 28, injuring eleven enlisted men. Three deaths and three "invaliding from the naval service" resulted from this explosion. There were fifty-one instances of suicide and attempted suicide with twenty-nine deaths, a decrease of seven and seven respectively as compared with 1935. In 1936 there were 1,322 persons invalided from the service. Of the total 1,141,908 sick days for the navy in 1936, naval hospitals were charged with 841,295, or 73.7 per cent. This number of hospital sick days, incurred by 23,347 active duty patients, represents 1.85 per cent of all naval personnel as constantly under treatment in naval hospitals throughout the year. In addition there were 46,299 sick days for 2,154 patients on the hospital ship U. S. S. *Relief*; 3,905 sick days for twenty tuberculous patients at the naval unit, Fitzsimons General Hospital, U. S. Army, Denver, and 10,013 sick days for eighty-eight insane patients at the naval unit at St. Elizabeth's Hospital, Washington, D. C. A total of 23,347 persons in the navy, 5,195 Veterans' Administration patients and 7,690 supernumerary patients underwent treatment in naval hospitals, or a grand total of 36,232 persons treated in naval hospitals with 1,259,541 sick days. There were 187 original admissions for malaria and three cases of tularemia. The admission rate for communicable diseases transmissible by oral and nasal discharges was 142.47 per thousand for 1936.

Venereal diseases occupied second place among all causes of morbidity and contributed the largest number of sick days of any group. This group has maintained this position since 1925, except for the year 1930. The admission rate for 1936 was 65.49 per thousand, 12 per cent less than for 1935. There were 1,213 cases of chancroidal infections, 5,453 cases of gonococcal infections, 1,377 cases of syphilis, 102 cases of venereal lymphogranuloma and three cases of verruca acuminata (venereal), or a total of 8,148 cases admitted during the year. During the past twelve years infections acquired prior to enlistment have not been included in the admission rate. There were 158,920 sick days reported for these diseases. The noneffective ratio, or the daily average number of persons on the sick list, was 348.99 per hundred thousand, 5 per cent less than for 1935.

The admission rate for all forms of tuberculosis was 136 per hundred thousand as compared with 131 in 1935. In addition to 169 original admissions representing disease acquired in the naval service in 1936 there were seventy-five cases remaining from the previous year, five readmissions, nine in which the disease or condition was a complication or sequel of some other condition, and five cases in which the disability was reported as existing prior to enlistment. All forms of tuberculosis were responsible for 34,536 sick days, or a daily average of 76 per hundred thousand patients constantly on the sick list.

The medical corps numbered 781 medical officers at the end of the fiscal year, June 30, 1937, which number is short of the number required, the report said. Although appropriation was made for 1938 for 851 officers, that number is still too small. During the fiscal year 1937 twenty medical officers received graduate instruction at the Naval Medical School, Washington, D. C., at the Marine Barracks, Quantico, Va., and at the Edgewood Arsenal, Edgewood, Md. In addition forty officers, eight nurses and five enlisted men took graduate work at various universities.

There is a continued shortage of qualified flight surgeons. One officer received training during the fiscal year at the Army School of Aviation Medicine, Randolph Field, Texas; five had been assigned for the present year. One flight surgeon each year completes the basic flying course at the Naval Air Station, Pensacola, Fla.; there are now four so qualified. Sixteen flight surgeons had flight orders on duty with active flying units.

The Naval Dispensary, which renders professional service to officers and men and their families in the District of Columbia and vicinity, reported 42,687 office calls and 11,915 house calls, 37,972 prescriptions filled, 8,689 laboratory examinations and 7,784 physical therapy treatments.

CORRECTION

Renal Mobility.—In the paper on this subject by Hess in *THE JOURNAL* May 28, page 1819, first column, third line from the bottom of the page, the word "prone" should have been "supine."

Foreign Letters

LONDON

(From Our Regular Correspondent)

May 21, 1938.

Shortage of Nurses; Proposals to Improve Their Conditions of Work

Nursing is an arduous profession, but attempts at improvement of the conditions have so far been on a limited scale. The result is that we are faced with a shortage of nurses and reform has become a burning question. The London County Council, which employs 7,000 nurses in its hospitals, has already reduced their working hours from sixty-six to fifty-four per week, and it is now proposed to reduce them to forty-eight. The government appointed a committee to investigate and report on nursing services, to which the British Medical Association has submitted important evidence. They stated that there is an insufficiency of candidates of any type for the nursing profession, and that the shortage will become greater in the near future on account of extension of hospital accommodation, increasing complexity of medical and surgical procedures, and reduction of nurses' hours of work. The shortage appears to be due to the long and arduous training and to the exacting character of the work, with which the salaries are not commensurate. The methods of training and the conditions of service impose many restrictions on the probationer and the qualified nurse. Finally, many more attractive occupations are open to young women. It is generally agreed that hospital training should not begin before the age of 18. This means for many girls a gap after leaving school and beginning to train, so that many girls suited for and attracted to nursing are absorbed into other occupations. The conditions of training are arduous. When the probationer enters the wards her education is generally subordinated to the work of the hospital. She often has to attend lectures at the end of a full day or night of duty and even sit for the final examination on the morning after a night on duty. The examination questions are often outside her province.

The British Medical Association made the following recommendations: 1. Preprofessional training courses should be organized for girls between the ages of 16 and 18. 2. The preliminary state examination should exclude the theory and practice of nursing and consist of questions on anatomy, physiology and hygiene, which it should be possible to study before beginning professional training. 3. It should be possible to establish a group hospital system of training in order to overcome the difficulties of recognizing smaller hospitals for training and to give a more varied type of instruction. 4. A substantial improvement in the conditions of living and pay should be created. 5. There should be recognized a second grade of nurse to act in an assistant capacity.

New Technic for Radium Treatment of Carcinoma of Vulva

At a meeting of the North of England Obstetric and Gynaecologic Society, Dr. F. Ellis, medical director of the Sheffield Radium Centre, reported cases of carcinoma of the vulva in which complete healing had been obtained without necrosis by the use of uniform irradiation. He said that radium treatment had been discredited in the past by the high incidence of radium necrosis and local recurrences. However, modifications of the technic which insured more uniform irradiation of the growth had so transformed the outlook that radium could now compete with surgical measures. The most important modification was nursing the patients in the same posture as was adopted for insertion of the radium. The radium needles then retained their position throughout the treatment, and "crowding" after return of the patient to bed was avoided. When the growth was at the anterior end of the vulva, the needles were inserted with the

patient supine; when the growth involved the posterior end, the left lateral position was adopted, the patient being nursed in the same position; when the entire vulva was involved, the needles were inserted and nursing was carried out with the patient in the lithotomy position. When needles had to be placed on the surface of the growth, rubber pads were used to protect adjacent cutaneous surfaces and to keep the needles at known distances from the growth. After insertion of the needles a perforated rubber dressing was placed over the vulva, and irrigation with eusol (lime, 25 Gm.; sublimed sulfur, 50 Gm.; distilled water, q. s. ad 1,000 cc.) was done twice daily; an indwelling catheter was necessary. The best results were obtained when all the needles were placed 1.5 cm. apart. The theoretically better distribution, with the peripheral needles only 1 cm. apart (in which the periphery of the growth received half as much radiation again as the center) had not given such good results. The total dose ranged between 4,500 and 7,000 roentgen units. When interstitial irradiation of the glands was necessary, two planes of radium, 2 cm. apart, had to be used if any of the glands had a diameter of more than 1 cm. Important in the after-treatment was avoidance of hot baths and ointments. For the desquamation stage gentian violet was the best application. Moist desquamation was treated with 0.5 per cent solution of silver nitrate. Necrosis and residual carcinomatous areas called for excision.

Dr. Ellis distinguished five stages in the cases treated: (1) operable primary growths; (2) operable primary growths with movable glands; (3) operable growths; (4) recurrence after treatment; (5) hopeless conditions. In 1935 nine patients were treated; the three patients in stage 1 were still alive and free from disease, and the remaining six died. In 1936 fourteen patients were treated; four were in stage 1 and were alive and free from disease, and two of four in stage 2, one in stage 3 and one in stage 4 were alive. Radium had the advantages over surgical intervention of absence of shock and operative mortality, minimum damage to the urethra and wider application in advanced stages. However, operation eliminated necrosis; there was possibly less subsequent discomfort; precancerous tissues were removed, and there was the possibility of removing affected iliac glands.

BERLIN

(From Our Regular Correspondent)

April 26, 1938.

Influence of Flying on the Circulation

The physiology and clinical aspects of aviation are considered of great importance in Germany and they are in process of thorough investigation. A discussion of this theme, by Docent Dr. G. Schlomka of Bonn, recently appeared in *Medizinische Klinik*. Both the peripheral and the central circulation are greatly influenced by flying. The special demands made by flying are based on two factors, speed and altitude, which differ fundamentally in one respect: altitude influences the circulation directly through diminished oxygenation of the blood, whereas the effect of speed is vastly more indirect. The speed factor is based on centrifugal force, always present whenever the course of the aircraft is altered. The entire organism of the flier is exposed to the same centrifugal forces as the ship. The circulation, however, possesses a certain peculiarity with respect to these forces; the vascular walls, especially those of the veins and capillaries, are especially pliant. Consequently the peripheral blood stream yields to the increase in hydrostatic internal pressure induced by the centrifugal force; this increase takes the form of a transverse dilatation of those vessels which are distal to the point of rotation. Since the blood volume is diminished, however, this means that blood in more or less considerable quantities will be transported peripherad. Owing to the great capacity of the abdominal circulation and the centrifugal speed, which in flying usually exerts its influence distad, large quan-

titles of blood will descend into the lower half of the body, with more or less complete emptying of the vessels of the upper half. Some vasomotor collapse will occur. The observations of different investigators of this problem are at variance. Many authors say that aerial travel increases the blood pressure, while others have observed that pressure is lowered during flight. The experimental data on the effect of centrifugal force on animals cannot unreservedly be applied to human beings although in some respects the correspondence is complete. The burden placed on a flier's circulation by the influence of altitude is also obscure. It is generally assumed that the altitude influences the circulation indirectly through the lowering of the pressure of the oxygen in the atmosphere and by the inhibition of oxygenation in the pulmonary blood supply. It has not been satisfactorily explained whether the manifestation of "early collapse" is participated in more by the peripheral circulation or by the heart. The effects of the hypoxemia on a damaged heart muscle will be manifested much earlier than if the heart is healthy. The practitioner should in general consider flying contraindicated for patients with ailments suggestive of angina pectoris, or coronary sclerosis or myocarditis. A trip that would entail flying at an elevation above 1,500 or 2,000 meters is particularly to be interdicted.

Cellular Metabolism and Inflammation

The Berlin Society of Physiology recently discussed the problem of cellular metabolism and inflammation. Professor Lohmann, who represented physiologic chemistry, based his observations on experimental studies. Inflamed cells are damaged body cells and possess marked functions of respiration and of aerobic glycolysis. At the site of the inflammatory process, physicochemical changes occur which are conditioned by the concentrations of oxygen, carbonic acid, lactic acid, bicarbonate and hydrogen ions. Lohmann described the reactions of normal and abnormal metabolism to these altered chemical concentrations. Cellular respiration is independent of the diminution of the sugar and bicarbonate values, as well as of the decrease in the p_{H_2} , whereas the aerobic glycolysis is completely dependent on each of the three factors. Since normal body cells have only the function of respiration without aerobic glycolysis, they maintain their undamaged metabolism until the onset of anaerobiosis; damaged cells, on the contrary, and this includes the normal blood cells and therefore the leukocytes of exudates, exhibit, under conditions of inflammation, a reduction in the aerobic glycolysis that may progress to the point of complete disappearance. The respiration alone will then remain and the cells apparently regain a normal metabolism. Examination of isolated muscle shows that inflammation renders the tissue incapable of function. Inflammation is a defense reaction of the organism.

Dr. H. Druckrey, assistant at the Berlin Institute of Pharmacology, the second speaker, discussed the metabolism of damaged tissues from the pharmacologic standpoint. Pharmaceutical substances may exert an important effect on "damaged" tissue. If metabolic conditions occur which differ from those of "normal" tissue, one may expect quantitative and qualitative differences in pharmacologic effect. Since most drugs participate in the normal metabolism, some may become detoxicated and others may first become toxic through collaboration with the metabolic processes. One important fact elicited by previous investigators is that nonspecific lesions induce first of all an increased metabolic rate. Furthermore, one may ask whether this increased metabolic rate following injury may not be evaluated as a manifestation of an increased functional capability of the cells. To clarify this problem, damaged cells were submitted to a second injury. These cells, despite the increased metabolism, were observed to be far less resistant than normal cells, the respiration of which was considerably less. The second injury

was followed by an immediate fall in the metabolic curve. Accordingly, repetition of similar injury elicits under certain conditions an effect completely opposite to that elicited by the initial injury.

AUSTRALIA

(From Our Regular Correspondent)

April 27, 1938.

National Health Insurance for New Zealand

The New Zealand government's proposals for the establishment of a free and universal health service, for the payment of national superannuation commencing at the age of 60 years and for granting increases in most classes of state pensions were outlined by the prime minister in a statement issued April 2. The new schemes are to be financed in part by an increase in the wages tax from 8 pence to 1 shilling in the pound, and what is now known as the unemployment tax will become the social security contribution. The money raised in this way will be subsidized on a pound for pound basis out of general government funds. The list of benefits may be summarized as follows: Institution of a free health service for all classes of the community; payment of superannuation at the rate of 30 shillings a week, with an income allowance of £1 a week from other sources; increase in invalidity pensions from £1 to 30/- a week; payment of sickness benefits at rates to be determined; increase in the children's allowance to recipients of sustenance; increased widows' pensions on a wider classification; institution of orphans' pensions at 15/- a week; increase in family allowances from 2/- to 4/- per child; increase in miners' pensions and war veterans' allowances. The proposals outlined by the prime minister will be placed in detail before the special parliamentary committee which has been set up to advise the government. The prime minister has expressed the opinion that the proposed benefits will provide a condition of security unsurpassed anywhere in the world. The government's intention is to make the scheme operative from April next year.

A COMPREHENSIVE HEALTH SCHEME

The government proposes a "universal practitioner service free to all members of the community who need medical attention." The scheme embraces free hospital and sanatorium treatment, mental hospital care and treatment for the mentally afflicted, medicines and maternity benefits in cash payments including the cost of maintenance in a maternity home. It is proposed to introduce as well the following services when practicable: anesthetic, laboratory and radiology, specialist and consultant, massage and physical therapy, transport to and from hospitals and dental and optical benefits. It is also proposed to provide home nursing and domestic help when the necessary staff has been trained to make such a scheme practicable. The government will provide for extended health education as a continuation of measures to educate the public in the promotion of health and the prevention of disease. Regarding the operation of the system, lists would be issued of the doctors who chose to join the scheme, and people would be able to select the one they preferred, up to a certain limit. The practitioner's panel would, however, be restricted to a specific number, and to some extent he would also be able to choose his patients. The freedom of choice on the patient's part would be restricted only by his nearness to the doctor.

PAYMENTS DURING SICKNESS

The institution of the invalidity pension revealed the fact that there are people who cannot qualify as permanent invalids but for whom some security should be provided. The government's proposal is to establish a sickness benefit, but the rates and conditions will be determined after the parliamentary committee has heard the evidence. It is proposed to cooperate with the friendly societies and to utilize their services for paying this amount to their members. In addition to sickness benefits,

provision has been made for those who were not sick and not invalids but whom illness or injury has rendered incapable of earning a complete livelihood. The government will determine the rates in individual cases according to particular circumstances.

MEDICAL CRITICISM

These proposals of the national health insurance scheme are remarkably at variance with the suggestions offered at the request of the government by the New Zealand branch of the British Medical Association. The profession has consistently advocated that whatever measures were undertaken should be directed toward assisting the people to meet their needs with regard to medical service where these needs press most heavily. The government's proposal of a free general practitioner service provides the one item of medical service to which the people now have the most ready access. It omits the very things—in particular the laboratory and specialist services—which are more difficult to obtain and are essential for the accuracy of diagnosis necessary for the efficiency of the general practitioners' services. The principle of offering assistance to those who cannot fully provide for themselves has been adopted in the pensions scheme, and it is difficult to see why the same principle has not been adopted in the proposal for health insurance. It would appear that in this respect the government's proposals are based on an enthusiasm for a polysocial ideal rather than on the real health requirements of the people.

The extent to which the proposed general practitioner service differed from the treatment that the New Zealand public was accustomed to expect from the family doctor, the necessity for the inclusion of specialists in the scheme, and the failure of the government to consider adequately the whole question of health administration were points discussed by Dr. Lawrence Ludbrook, who for the past three years has represented the Auckland division of the British Medical Association on health insurance matters. In England the contract of the general practitioner in the insurance scheme is to provide, in effect, such medical advice and treatment as could reasonably be expected from general practitioners as a class. In New Zealand the practitioner provides a service, particularly in the country districts, which is much more comprehensive. It is regarded as part of his daily task to set fractures, perform operations of technical skill and undertake a wide range of the medical and surgical needs of the community. The insurance service is to be available to every member of the community, whether he is a millionaire or a pauper. The British Medical Association considers that there is a considerable proportion of the population which is able and which would prefer to provide a complete service themselves, while others in the more serious calamities of illness are at a disadvantage through lack of free specialist facilities.

It is felt that if finance is limited it would be of much greater benefit to provide a complete scheme for the smaller number of people in the lower income groups, thus enabling them to get general and special attention, than to introduce incomplete proposals covering the whole population. Dr. Ludbrook considers that the general practitioner service in Great Britain has proved to be inadequate, and for twenty-five years attempts have been made to introduce a system of specialist treatment only to find it impossible to catch up with finances. Fears for the standard of attainment and ability on the part of the general practitioner under this system were expressed. There would be little incentive for him to qualify for special work not required by the contracts. With no part for specialists in the insurance scheme and with hospital treatment provided, the increase in the number of patients in the institutions will be enormous, but the government has not yet indicated that there will be any alteration in the present methods of maintenance. In the opinion of medical men, hospitals could be made more

efficient and costs could be reduced by the provision in the home of general practitioners' and nursing services.

Another problem arises in the large proportion of the population living in country districts. Here the question of mileage is involved, and it appears that the cost of providing medical attention in the dominion is going to be much greater than in other more closely settled countries. New Zealand provides a large amount of hospital service, but there is no doubt that the system is susceptible of a great deal of improvement, the small country hospitals often being uneconomical and inefficient. It is considered that there was need for a much better coordinated system, but the government had failed to investigate this phase of health administration which, in the opinion of the British Medical Association, was of the utmost importance. A comprehensive long range plan should be drawn up instead of introducing only one aspect at tremendous cost. A general practitioner scheme was merely complementary to other equally important forms of health administration. These should have been given due consideration by an independent and, if possible, nonpolitical body.

PROBABLE COST

It is learned on authority that the increased pensions and the institution of the proposed free health service are likely to cost in the aggregate £16,000,000 annually. The revenue from the wages tax at 1 shilling in the pound is expected to be in the vicinity of £6,000,000, and this will leave a discrepancy of at least £10,000,000, which will require rather more than the pound for pound subsidy mentioned in the government's plan. In the final analysis the pensions and benefits will be paid not by the government but out of the earnings of the able bodied. They are to be taxed at the rate of 2 shillings in the pound (1/- by direct and 1/- by general taxation) for the whole of their working lives, in order to provide for the sick and the indigent. It is considered in New Zealand that one tenth of earnings is a high price to pay for social security, especially for those who keep good health and are successful in their work and who may never get anything in return for their sacrifice but the thought that they have helped those less fortunate. In any case the soundness of the social security scheme will not depend on the government but on the ability and the will of the fit to provide for the unfit and the aged. In New Zealand, at the present time, social security is being narrowed in two ways: first by reducing the demands on the able bodied and second by reduction in their numbers. The government is shortening the working life of the people by raising the school age and reducing the pension age. At the same time the forty hour week decreases their productive activities. The effect in the aggregate must be considerable. If only one end of the calculation is taken, the reduction to 60 years of the pensionable age for men will next year permit about 28,000 to retire on pension. Perhaps 20,000 will be eligible and accept the chance. So 20,000 will be removed from the ranks of the earners and taxpayers to the ranks of the pensioners, already over 100,000 strong in a population of about 1,000,000. From now on, moreover, the numbers of those aged 20-60 will decrease steadily, while the number of those over 60 will increase steadily, owing to the combined effect of the low birth rate and the low death rate. Eighteen years from now there will be 20,000 fewer persons in New Zealand aged 20-24 available for employment than there were in 1936. On the other hand, persons of 60 years of age and over increased between 1926 and 1936 by 50,304 and now comprise more than one in ten of the total population. If persons 20 years of age are to be asked to contribute 10 per cent of their income toward security many years ahead, the scheme must be expected to give security in forty years' time. At present the national income is about £145,000,000, and special and general taxation of 2/- in the pound will yield the £14,500,000 annually presumed to be necessary. But as per-

sioners increase while earners decrease, the relation might break down. There is the further question whether national income will remain at present high levels. All contingencies must be looked for and guarded against—changes in the productive powers of those who must support the rest, in the age groupings of the people, and in the economic estimation of the product of their labor.

There is a general feeling in New Zealand that the labor government, with an unparalleled enthusiasm for its cause, is introducing measures at a speed which is faster than the powers of adjustment of the community. This speed savors rather of revolution than of evolution.

The Australian Institute of Anatomy

Prior to 1924 the federal government had expressed regret that the Australian nation did not possess a collection of specimens of the unique and fast disappearing fauna of Australia. Sir Colin McKenzie, who later became the first director of the Institute of Anatomy, presented to the federal government his entire private collection. To provide accommodation for this gift, the Zoological Museum Agreement Act of 1924 provided for the formation of an Australian Institute of Anatomy and the erection of a monumental building at Canberra. In addition to the original collection, other free gifts are on view at the institute. Among them are the Horne-Bowie collection, dealing with the life of the central Australian aborigines and throwing valuable light on the psychology of this Stone Age people; the Burrell collection, which deals with the life history of the platypus and which is unique in the world (the platypus is the link between bird, reptile and mammal); the Milne collection, which is an anthropologic and ethnologic collection dealing with the aborigines of New South Wales and contains many native weapons and implements now unobtainable; the Murray Black collection of anatomic material representative of the aborigines of southern Victoria and the river Murray; the Nankivell collection, illustrating the anatomy of the aborigines of the Murray valley; the Howard University collection, which includes a collection of specimens from Harvard University, representing a carefully worked out epitome of the archeology of the United States and which, together with two rare skeletons of primitive North American Indians, was a good will gift from the university to the Institute of Anatomy; the Sir Hubert Murray collection, dealing with the anthropology of Papua; the Rabaul Ethnological collection, concerning chiefly the ethnology of the mandated territory of New Guinea, and the Basedow collection, which deals especially with the anthropology of central and northern Australia.

The Institute of Anatomy, the first unit of a National University of Australia, has already become the most important center in the southern hemisphere for the study of comparative anatomy and of its application to health and disease. The microscopic specimens of Australian fauna number thousands and are unique in the world. They represent normal mammalian tissues unaffected by disease or domestication, and with these human tissues such as those affected with cancer can be compared. The public is admitted to the two museums of osteology and applied anatomy.

Goiter in New Zealand

The Annual Report on vital statistics of New Zealand has provided evidence of the frequent occurrence of goiter in that country. Hercus and Purves have obtained information on the death rates from thyroid diseases compiled from the death certificates available from 1885 onward. A rising rate from 1889 to 1928 is clearly shown, the mean annual rate, 0.48 per 10,000 population in 1929, being more than nine times greater than the rate in 1889. The female incidence is higher than the male and varies from 3 to 10.8 per 10,000 of the population, with the exception of the period 0-5 years of age, when the male incidence is higher than the female. The average for the

whole population for all ages is 5.6. A marked rise is shown at 10-15 years and again at 20-25 years and may be ascribed to the influences of puberty and pregnancy respectively. Toxic was not separated from nontoxic goiter until 1908, when the Bertillon system of classification of deaths was adopted. Thyrotoxicosis is preponderant in the total deaths, and thyrotoxicosis death rates increase up to 70 years of age. Deaths from other diseases of the thyroid are too few for separate analysis. The admissions to public hospitals of all thyroid diseases show a striking increase from 1889 to 1933. Also the rate of increase is at present two and a half times the rate immediately after the war. The present rate is over 5.5 per 10,000 of population. Difficulties of classification in the ward make the constitution of these hospital cases difficult to determine. Exophthalmic admissions show a sharply rising rate, and for the period 1929-1933 represented 57.5 per cent of the total of all thyroid diseases. No data are available as to the distribution of nodular and diffuse nontoxic goiters. No positive correlation is observed between the incidence of goiter and malignant disease of the thyroid in New Zealand. Deaths from cancer of the thyroid are rare and not more than ten a year. Prophylactic measures against goiter have been instituted, but more complete statistical data are necessary to measure their effect.

Industrial Hygiene in Queensland

Recent legislation gave to the director general of health and medical services power to investigate the effect of conditions of work and housing on the health of employees. The director has no power to remedy any defects himself, but he may report them to the department or to the governor in council, so that legislative action may be taken. At the same time the state health department was given control of medical and dental services in schools. This should improve the service for outlying centers, as doctors attached to district hospitals will be able to assist. Restrictions relating to the use of lead paint were extended and power was given to health inspectors to take samples of paint for analysis from any building.

BELGIUM

(From Our Regular Correspondent)

April 23, 1938.

The Health of Adolescent Workers

M. Silvert has published in *Indépendance belge* a review of the medical survey of industrial conditions with special reference to the health of apprentices in the industrial training schools. The survey was started in September 1936 and included 1,774 boys and 484 girls from the urban areas of Brussels, Ghent and Liège. These youths were preparing themselves to be metallurgists, electricians, accountants, dressmakers and so on. Deplorable conditions were brought to light. In one workroom occupied by female apprentices, eighty-one different pathologic defects were observed among eighty of the girls. The most common defects determined were scolioses and the sequels of rickets (forty-one cases), defective vision (ten cases), not to speak of dental caries (sixteen cases) and subnormal body weight (fourteen cases). There was one case of tuberculosis. In a machine shop training school there were seventy-five boy apprentices from 12 to 15 years of age, thirty of whom were of delicate constitution. Moreover, thirty-three boys were affected with scolioses and the sequels of rickets, ten had visual disturbances, and there were thirty-seven miscellaneous defects. The investigators arrived at several conclusions. They declare that "medical supervision of youthful apprentices has been proved indispensable not only from the standpoint of detection of disease but from the standpoint of vocational guidance. The importance of medical examination cannot be exaggerated, for on the contraindications depend all further decisions with respect to which occupation is to be recommended or disapproved." The authors deprecate the present system under

which applicants for admission are not required to have any medical examination whatever and the degree of physical maturity of a pupil is given no consideration. Children 12 years of age and over are admitted to these schools but in most instances this age is too young. Besides, the courses are very exacting. In the technical school at Liège, with its pathetic list of debilitated pupils, the program is based on forty-five school hours a week. Half of this time is devoted to practical courses, which imply that the boy is kept on his feet at work. The schedule is unrelieved by periods of rest or recreation and no course in physical education is offered. For healthy youngsters of 16 years the regimen would be harsh, but to submit 12 year old children, most of them delicate, to such a routine is almost criminal. There are 137 vocational training schools for boys and ninety-seven such schools for girls in Belgium with a total pupil population around 29,000 (21,000 boys and 8,000 girls).

Dr. Peremans, the author of a special report, believes that medical supervision of these schools is of the utmost importance. A suitable service could be assured by the appointment of five full time medical inspectors who would examine thirty children daily for the forty weeks of five days each in the school year. This plan has one disadvantage. It would tend to limit the activities of the school doctors, who, as a consequence, would lose contact with other aspects of industrial medicine. Dr. Peremans therefore suggests that medical supervision of industry in general should be reorganized on a larger scale.

The trade schools are already amenable to a certain amount of medical supervision, such as it is, and a number of sick apprentices have been detected. The last annual report mentions 2,813 cases of various disorders, among which scolioses and the sequels of rickets loom largest (686 cases), followed by debility and anemia (502 cases). Among male youths of all groups who submitted to medical examination, defects were present in about 10 per cent. The corresponding figure for industrial apprentices is more than 30 per cent. Among 28,199 young apprentices of both sexes, 8,725 defects were found on examination. Bad teeth and enlarged tonsils, to be sure, account for an extremely large proportion of the anomalies, but the commonness of these defects does not mean that they are to be neglected. Apart from 3,000 instances of defective teeth or tonsils, debility or anemia was present in 788 instances, defects of visual apparatus in 1,388 and defects of the osseous skeleton in 519. The results of these several investigations are disquieting. They verify the data furnished by army recruiting boards and the exceedingly inadequate services of school medical supervision. The younger generation is suffering, more profoundly than one unacquainted with the facts would believe possible, from the aftermath of four years of war and five years of economic depression.

The Future of the Profession in Belgium

The commission for study of the overcrowding of the universities and the unemployment of educated persons has published its second general report. In the entire kingdom in the year 1913 there were 4,426 physicians, or one physician to each 1,726 inhabitants; in 1930 there were 5,546 physicians, or one to each 1,459 inhabitants; in 1935 there were 6,311 physicians, or one to each 1,315 inhabitants. The increase has been greatest in Brabant; namely, from one doctor to 1,197 inhabitants in 1913 to one to 938 inhabitants in 1935. On the other hand, in Limbourg province, which has the fewest physicians, the number increased from ninety-three doctors in 1913 to 174 doctors in 1935, or from one doctor to 3,109 inhabitants in 1913 to one doctor to 2,285 inhabitants in 1935.

Overcrowding of the profession is essentially due to the large number of men who wish to practice in the urban areas. On Dec. 31, 1936, there were in Brussels and environs 1,379 physi-

cians, or one physician to every 653 inhabitants; in Antwerp and environs 456 physicians, or one to every 1,068 inhabitants; in Liège and environs 416 physicians, or one to every 605 inhabitants, in Ghent and environs 242 physicians, or one to every 889 inhabitants.

The situation of the medical profession is not disquieting if one considers the development of social service, and a greater attention to hygiene on the part of the population as a whole. It is desirable, however, that there should be a better distribution of practitioners. It is particularly regretted that the number of colonial physicians should be inadequate and that so many newly graduated doctors forego this magnificent opportunity to bestow on the native population the benefits of hygiene and medical service.

Gasoline Poisoning in the Belgian Army Air Corps

Colonel Dr. Sillevaerts has published in *Bruxelles médical* a report on cases of poisoning attributable to combustibles, among the personnel of the Aéronautique militaire belge. Such accidents have been rare. There are no cases on record prior to the official adoption, on unexplained technical grounds, of "87 octane" type gasoline. In his discussion, the author takes up cases occurring among the ground personnel in charge of the fuel service and cases occurring during flight among the flying personnel, whether the result of absorption of gasoline before combustion or from inhalation of exhaust products from the motors of planes using the inculpatated fuel. From his examination of all the data, Sillevaerts concludes that the handling of 87 octane tetraethyl gasolines in the presence of a circuit that is not hermetically closed will be followed by incipient intoxication, usually scarcely noticed, among the personnel of our gasoline depots. Minor disturbances observed (in one case a fairly severe poisoning developed) may be attributed in part to tetraethyl lead, in part to benzene poisoning. Disturbances noted during flight could be traced in part to back flow of vapors of unburned tetraethyl gasoline originating in leaks from faulty piping or from the functioning of the overflow pipes and in part to weak concentrations of carbon monoxide released in the atmosphere of the cabin. These disturbances usually appear only during aerial journeys that entail numerous and sudden changes of altitude as well as on the occasion of stunting; in other words, under circumstances which require the overflow pipes to function at full force and the engine to give off a maximum of carbon monoxide. All the tests were made on board planes that were in perfect flying condition and after the airtightness of the fire extinguishers and the soundness of the fuselage had been carefully determined.

Marriages

BERT TRUMAN BRUNDAGE, Nashville, Tenn., to Miss Mary Jo Page of McMinnville in Franklin, Ky., February 18.

DAVID SCOTT BAYER, New York, to Miss Birdella Virginia Murdock of New Haven, Conn., March 26.

PHILIP GROVER PADGETT, Bryson City, N. C., to Miss Charlene Cooper of Galveston, Texas, April 2.

WAYLAND NASH MCKENZIE, Albermarle, N. C., to Miss Alice Katherine Lacy of Richmond, in April.

DICKINSON SERGEANT PEPPER to Miss Hester Marie Laning, both of Philadelphia, April 23.

JOHN L. SCHULSKY, Springfield, Ill., to Miss Lois Stahr of Louisville, Ky., March 26.

JOHN DONALD FLYNN, Grand Rapids, Mich., to Miss Ruth E. Hess of Detroit, March 1.

JOHN WILLIAM STRAUGHAN, Warsaw, N. C., to Miss Helen Ann Ward, March 24.

HENRY BAGLEY BENSON to Miss Miriam Copeland, both of Atlanta, Ga., in April.

Deaths

Calvin Hayes Elliott ♂ Hartford, Conn.; Medico-Chirurgical College of Philadelphia, 1905; member of the New England Obstetrical and Gynecological Society; fellow of the American College of Surgeons; visiting gynecologist and obstetrician to the Hartford Hospital; visiting gynecologist to the Municipal Hospital; consulting gynecologist and obstetrician to the Bristol Hospital, Bristol, Manchester (Conn.) Memorial Hospital, Rockville (Conn.) City Hospital, New Britain (Conn.) General Hospital and the Neuro-Psychiatric Institute of the Hartford Retreat; aged 59; died, March 15, in Tucson, Ariz., of abscessed teeth, secondary anemia and nephritis.

Haim I. Davis ♂ Chicago; University of Kharkov Faculty of Medicine, Kharkov, Russia, 1891; professor of psychiatry, emeritus, University of Illinois College of Medicine; member of the Central Neuropsychiatric Association; senior attending neurologist to the Michael Reese Hospital; chief of the attending staff and formerly superintendent of the Cook County Psychopathic Hospital; consulting neurologist to the Winfield (Ill.) Sanatorium; aged 72; died, April 11, of carcinoma of the lung.

William Harrison Leffler, Fountain Springs, Pa.; Medico-Chirurgical College of Philadelphia, 1907; served during the World War; for several years served on the staff of the Veterans Administration in Philadelphia, in Pittsburgh and in Newington, Conn.; aged 58; died, April 23, in the Veterans Administration Facility, Hines, Ill., of epithelioma of the bladder.

James Valentine Clarken, Baltimore; Baltimore Medical College, 1908; member of the Medical and Chirurgical Faculty of Maryland; at various times on the staffs of the Bon Secours, South Baltimore General, St. Agnes', Mercy and St. Joseph's hospitals and the Church Home and Infirmary; aged 51; died, April 17, of coronary thrombosis.

Robert Jackson Cabeen ♂ Leon, Kan.; University Medical College of Kansas City, Mo., 1903; past president of the Butler County Medical Society; part time county health officer for several years; member of the school board and mayor; aged 61; died, April 23, of cerebral hemorrhage, while playing golf at Glencoe, Ill.

Max Cohn, Chicago; Schlesische-Friedrich-Wilhelms-Universität Medizinische Fakultät, Breslau, Prussia, Germany, 1900; director of the department of radiology, Mount Sinai Hospital; aged 62; died, May 26, of suppurative pyonephrosis, diabetes mellitus, hypertrophy and abscess of the prostate.

Edmund B. Parsons ♂ Palestine, Texas; Tulane University of Louisiana Medical Department, New Orleans, 1885; fellow of the American College of Surgeons; on the staff of the Misouri Pacific Lines Hospital; aged 73; died, March 13, in a hospital at Houston of carcinoma of the sigmoid.

Herbert Morgan Decker, Davenport, Iowa; State University of Iowa College of Medicine, Iowa City, 1906; member of the Iowa State Medical Society; served during the World War; formerly a dentist; aged 60; died, April 21, in the Veterans Administration Facility, Minneapolis.

William Curtis Caywood, Winchester, Ky.; Kentucky School of Medicine, Louisville, 1906; member of the Kentucky State Medical Association; past president of the Clark County Medical Society; served during the World War; aged 60; died, April 13, of cerebral hemorrhage.

William Guy Pittman, Pine Bluff, Ark.; University of Louisville (Ky.) Medical Department, 1909; member of the Arkansas Medical Society; aged 56; died, March 16, in the Baptist Hospital, Memphis, Tenn., of chronic glomerular nephritis and malignant hypertension.

James L. Bolt, Easley, S. C.; Baltimore Medical College, 1895; member of the South Carolina Medical Association; past president and secretary of the Pickens County Medical Society; at one time member of the state legislature; aged 65; died, April 11, of coronary thrombosis.

George Herbert Mathewson, Montreal, Que., Canada; McGill University Faculty of Medicine, Montreal, 1894; formerly clinical professor of ophthalmology at his alma mater; for many years on the staff of the Montreal General Hospital; aged 68; died, March 18.

Robert James Kemper, Indianapolis; Indiana University School of Medicine, Indianapolis, 1908; member of the Indiana State Medical Association; aged 58; on the staffs of the Methodist Hospital, City Hospital and St. Vincent's Hospital, where he died, April 3.

William Wallace Russell, San Diego, Calif.; St. Louis University School of Medicine, 1916; member of the California Medical Association; served during the World War; aged 46; died, March 2, in the Mercy Hospital, of acute hemorrhagic nephritis.

Alban Judson Lobdell, Winchester, N. H.; New York Homeopathic Medical College and Hospital, 1893; member of the New Hampshire Medical Society; formerly member of the board of health; aged 69; died, March 5, in Keene, of pneumonia.

Henry Nicholas Harper, Ruston, La.; Tulane University of Louisiana Medical Department, New Orleans, 1904; parish coroner; on the staff of the Ruston-Lincoln Sanitarium; aged 58; died, April 3, of injuries received in an automobile accident.

Arthur L. Mikesell ♂ Fort Wayne, Ind.; Chicago Homeopathic Medical College, 1892; past president of the Allen County Medical Society; aged 70; on the staff of the Lutheran Hospital, where he died, April 8, of an acute gallbladder infection.

Owen Breckinridge Demaree, Frankfort, Ky.; University of Louisville Medical Department, 1891; served during the World War; aged 70; on the staff of the King's Daughters' Hospital, where he died, April 10, of bronchopneumonia.

Robert Lee James ♂ Blue Island, Ill.; Chicago Homeopathic Medical College, 1890; College of Physicians and Surgeons of Chicago, 1891; on the staff of St. Francis Hospital; aged 72; died, March 25, of sarcoma of the vertebra.

Merle Horton Whitlock, Washington, Ill.; Hahnemann Medical College and Hospital, Chicago, 1906; past president of the school board of Peoria; aged 55; died, March 29, in the Methodist Hospital, Peoria, of cerebral hemorrhage.

Robert Squair Noland, Nicholasville, Ky.; University of Louisville (Ky.) School of Medicine, 1937; intern at the Employees' Hospital of the Tennessee Coal, Iron and Railroad Company, Fairfield; aged 28; died, March 23.

Richard Herman Dingelstedt, Hoboken, N. J.; University of the City of New York Medical Department, 1895; aged 65; formerly on the staffs of St. Mary's Hospital and Christ Hospital, where he died, April 22, of heart disease.

Henry Pace ♂ Eureka Springs, Ark.; Washington University School of Medicine, St. Louis, 1903; past president of the Carroll County Medical Society; veteran of the Spanish-American War; aged 64; died, March 13.

James Francis Kelly, Hartford, Conn.; Yale University School of Medicine, New Haven, 1933; member of the Connecticut State Medical Society; aged 31; died, April 3, in St. Francis Hospital, of intracranial hemorrhage.

Richard Lionel King, Prince Albert, Sask., Canada; Trinity Medical College, Toronto, Ont., 1900; past president of the Council of the College of Physicians and Surgeons of Saskatchewan; aged 59; died, March 10.

Howard Armstrong Abraham, Oxford, N. Y.; University of Toronto Faculty of Medicine, 1906; on the staff of the New York State Woman's Relief Corps Home; aged 55; died, March 16, of heart disease.

Raymond Wesley Lagersen, Minneapolis; University of Minnesota Medical School, Minneapolis, 1923; on the staff of St. Barnabas Hospital; aged 40; died, March 13, in the University Hospital.

Frank Louis Sevanoak, Pittsfield, Mass.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1883; aged 79; died, March 15, in the House of Mercy Hospital.

William A. Stillwagon, Kansas City, Kan.; College of Physicians and Surgeons, Medical Department Kansas City University, 1902; member of the Kansas Medical Society; aged 66; died, March 29.

Charles Lincoln Stoddard, San Diego, Calif.; Chicago Homeopathic Medical College, 1903; aged 75; died, March 15, in the Mercy Hospital, of acute dilatation of the heart following herniorrhaphy.

Henry Arthur Ulvin ♂ Milwaukee; University of Oregon Medical School, Portland, 1916; served during the World War; aged 48; died, March 31, of carbon monoxide poisoning, self administered.

Edward Monroe Jenkins, Hillsboro, Texas; Vanderbilt University School of Medicine, Nashville, Tenn., 1891; member of the State Medical Association of Texas; aged 69; died, March 27.

George Joseph Field ♂ Salt Lake City; Missouri Medical College, St. Louis, 1889; served during the World War; aged 70; died, April 23, at Rochester, Minn., of hypertrophy of the prostate.

John James Donohue, Uncasville, Conn.; Baltimore Medical College, 1909; member of the Connecticut State Medical Society; aged 80; died, April 17, of heart disease and paralysis agitans.

James Henry Moran, Chicago; Northwestern University Medical School, Chicago, 1909; on the visiting staff of St. Anne's Hospital; aged 66; died, March 2, of organic heart disease.

William O. Patton, Robbinsville, N. C.; College of Physicians and Surgeons, Baltimore, 1882; formerly member of the state legislature; aged 77; died, March 6, of cerebral hemorrhage.

Luther F. Rhodes, Abilene, Texas; Memphis (Tenn.) Hospital Medical College, 1898; formerly county health officer; aged 61; died, March 29, in Sanatorium, of pulmonary tuberculosis.

Jack Tipton Cottrell ♂ Catlettsburg, Ky.; University of Louisville School of Medicine, 1927; aged 38; died, April 1, in the Paintsville (Ky.) Hospital, of an accidental gunshot wound.

Charles Hill, Chicago; Northwestern University Medical School, Chicago, 1902; member of the Illinois State Medical Society; aged 75; died, April 11, of carcinoma of the throat.

William Carl Seale, Catchings, Miss.; Loyola University School of Medicine, Chicago, 1916; served during the World War; aged 45; died, March 30, in a hospital at Greenville.

Hermilo Mendoza, Juarez, Mexico; Universidad de Guadalajara Facultad de Medicina, Mexico, 1903; aged 63; died, April 25, following an operation for cholecystitis and nephritis.

Lewis Sydney Potter ♂ Detroit; Detroit College of Medicine, 1914; for many years on the staff of the Providence Hospital; aged 48; died, April 19, of carcinoma of the lung.

Charles Milton Storch, Biloxi, Miss.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1891; aged 67; died, March 14, of carcinoma of the prostate.

John Simon Windisch, Lakewood, Ohio; Western Reserve University Medical Department, Cleveland, 1894; also a dentist; veteran of the Spanish-American War; died, March 6.

Alphonsus J. Engel, St. Louis; St. Louis College of Physicians and Surgeons, 1899; aged 68; died, April 14, in the Missouri Baptist Hospital, of carcinoma of the pancreas.

Allan Chubb Steckle, Battle Ground, Wash.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; aged 65; died, March 5.

Joseph F. Campbell, Morristown, Tenn. (licensed in Tennessee in 1889); member of the Tennessee State Medical Association; aged 70; died, April 1, of pneumonia.

John Francis O'Brien, Canton, Ohio; Baltimore University School of Medicine, 1898; formerly on the staff of the Mercy Hospital; aged 63; died, March 7.

James Granville Mastin, Chicago; Keokuk (Ia.) Medical College, 1894; aged 80; died, March 3, in the Cook County Hospital, of arteriosclerotic heart disease.

Marie White, Pasrur, Punjab, India; Woman's Medical College of Baltimore, 1886; for many years a medical missionary; died, March 20, in Wilksburg, Pa.

Henry Elden Willdis, Cleveland; St. Louis University School of Medicine, 1937; intern at St. John's Hospital; aged 26; died, March 1, of bronchopneumonia.

William H. Byrd, El Dorado, Ark.; Memphis (Tenn.) Hospital Medical College, 1903; aged 79; died, April 3, of arthritis, heart disease and urinary suppression.

Ludovic Verner, Montreal, Canada; Laval University Medical Faculty, Montreal, 1902; Laval University Faculty of Medicine, Quebec, 1906; died in March.

Henry Howard Mather ♂ Chicago; Chicago Medical College, 1888; aged 77; died, March 11, of valvular heart disease, myocarditis and coronary occlusion.

Samuel M. Pitts, Saluda, S. C.; Medical College of the State of South Carolina, Charleston, 1886; aged 75; died, March 31, of coronary thrombosis.

L. R. Boynton, Mount Vernon, N. Y.; New York Homeopathic Medical College and Hospital, 1902; aged 68; died, March 10, of myocarditis and influenza.

Charles Clary Singley, Elmhurst, Ill.; Jefferson Medical College of Philadelphia, 1881; aged 81; died, March 17, in the Elmhurst Community Hospital.

Martin W. Dawley, Richfield Springs, N. Y.; Eclectic Medical Institute, Cincinnati, 1886; aged 77; died, March 23, of arteriosclerotic heart disease.

Sara Day Hosford Lewark ♂ Strasburg, Colo.; Colorado School of Medicine, Boulder, 1897; aged 65; died, April 8, in the Mercy Hospital, Denver.

Gordon Elliot Booth, Ottawa, Ont., Canada; McGill University Faculty of Medicine, Montreal, 1910; aged 53; died, March 6, of heart disease.

James C. Clarke, Baltimore; Hahnemann Medical College and Hospital of Philadelphia, 1888; aged 72; died, April 15, of carcinoma of the larynx.

John Jackson Farmer, Rome, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1909; aged 76; died, March 22, of carcinoma.

Charles C. Echols, Canon, Ga.; University of Georgia Medical Department, Augusta, 1900; aged 67; died in April, of cerebral hemorrhage.

Clarence Moors Golden ♂ Tyler, Minn.; St. Louis College of Physicians and Surgeons, 1906; aged 60; died, March 23, of cirrhosis of the liver.

Charles Fisher Howell, De Quincy, La.; Tulane University of Louisiana Medical Department, New Orleans, 1901; aged 66; died, March 21.

Allan James MacKinnon, Zurich, Ont., Canada; University of Toronto Faculty of Medicine, Toronto, Ont., 1908; aged 63; died, March 18.

Roy Ross Risk, Anna, Ill.; Rush Medical College, Chicago, 1930; served during the World War; aged 45; died, March 21, of angina pectoris.

Charles Murray Clayton, Indianapolis; Medical College of Indiana, Indianapolis, 1902; aged 61; died, April 1, in the Methodist Hospital.

Edward Dickson, Coal Creek, Tenn.; Medical College of Alabama, Mobile, 1882; aged 83; died, April 10, of cerebral hemorrhage.

William K. Richardson, Tompkinsville, Ky.; University of Nashville (Tenn.) Medical Department, 1877; aged 88; died, March 10.

James Lorne Graham, Ottawa, Ont., Canada; University of Toronto Faculty of Medicine, Toronto, 1909; aged 50; died, March 12.

Emily Brooke Slosson ♂ Sabetha, Kan.; Woman's Medical College of Pennsylvania, Philadelphia, 1875; aged 86; died, March 15.

Joseph Aloysius Corcoran, Montreal, Que., Canada; Trinity Medical College, Toronto, Ont., Canada, 1898; aged 59; died, March 13.

Benjamin H. Brock, Hogansville, Ga.; Southern Medical College, Atlanta, 1894; aged 70; died, April 1, of carcinoma of the liver.

Joseph L. Lalonde, Pawtucket, R. I.; School of Medicine and Surgery of Montreal, Que., Canada, 1900; died, April 6.

Roscoe Broughton ♂ Laurel, Mont.; Detroit College of Medicine, 1904; mayor; aged 55; died, April 9, of heart disease.

John Michael Crowley, Franklin, Mass.; Dartmouth Medical School, Hanover, N. H., 1897; aged 62; died, March 31.

John L. Homer, Minneapolis; University of Oklahoma School of Medicine, Oklahoma City, 1935; aged 28; died, April 8.

Duncan McEwen, Maxville, Ont., Canada; McGill University Faculty of Medicine, Montreal, 1896; died, March 23.

Robert Martin Coleman, Wellesley, Mass.; Tufts College Medical School, Boston, 1921; aged 44; died, March 24.

Leslie B. Sorrell, Waldron, Ark.; Eclectic Medical University, Kansas City, Mo., 1914; aged 50; died, March 11.

Alfred Thomas Little, Barrie, Ont., Canada; Trinity Medical College, Toronto, 1885; aged 75; died, March 29.

Gustave Charles Wichman, Glendale, Calif.; Illinois Medical College, Chicago, 1899; aged 63; died, March 28.

Eugene Merchants Brown, Boston (licensed in Massachusetts by years of practice); aged 68; died, March 28.

George B. Sharp, Piedmont, Ala.; Southern Medical College, Atlanta, 1893; aged 67; died, March 21.

R. H. Mays, Duke, Okla.; Ensworth Medical College, St. Joseph, Mo., 1906; aged 58; died, March 19.

Edward L. Webb, Los Angeles; Rush Medical College, Chicago, 1894; aged 65; died, March 10.

Samuel M. Dow, Cleveland (licensed in Ohio in 1894); aged 84; died, April 13, of pneumonia.

Correspondence

INJECTION METHOD FOR HERNIA

To the Editor:—Recent issues of the medical press have carried notices that the U. S. Employees Compensation Commission has issued an order dated Feb. 24, 1938, that the treatment of hernia by the injection method is not authorized and will not be paid for in WPA and federal employee cases. This, of course, will be taken as official government condemnation of a mode of treatment, in itself a dubious assumption of authority in matters of medical opinion, which, if followed as a precedent, is likely to hamper progress on more than this one medical front.

What is worse, this order merely makes official an attitude stubbornly held by this commission over several years, as numerous herniated federal employees know to their cost. The argument used to be that federal employees can be operated on in Navy and Army hospitals at low cost to the government, this single consideration of economy being brought forward as sufficient and decisive. All efforts to bring before the commission the favorable results now widely being secured by competent and experienced workers with the injection method have always been met by curt, ex cathedra citation of official "decisions." That several thorough modern studies and reports on an aggregate of more than 5,000 carefully traced cases today show (with one questionable exception) injection results fully comparable to those of surgery is being consistently ignored. Official opinions and decrees, it seems, are not subject to review and reconsideration.

This arbitrary attitude on the part of the compensation authorities has worked real hardship on federal employees. I can cite nineteen cases (in which there were twenty-four hernias) which have come locally under my personal care, mostly from one federal establishment. Every effort to secure federal compensation having been flatly rejected if the injection treatment was employed, these employees of the government have stayed on the job, taken this ambulatory treatment and paid for it out of their own pockets. Of the nineteen, two cases are still under treatment, all the others being cured. This group has sent a total of thirty-four patients who have taken this treatment, with a number of others who are considering it on the recommendation of members of the group. In some instances the securing of federal jobs or the getting of promotions has depended on the curing of these hernias. In every such instance the case was passed on as cured after the injection treatment, and the job or promotion secured. In other words, despite the condemnation by the compensation officialdom and their refusal to pay for the injection treatment even if effective, federal employees, on the basis of results experienced by their fellows, are choosing the injection treatment, paying for it themselves, getting cured and being pronounced cured by federal medical examiners. Whereupon prejudice, in position of authority, extends its arbitrary decision to a vast army of relief workers as well as to regular federal employees, thereby, I presume, contributing to the progress in the Works Progress Administration.

Far more enlightened and considerate is the attitude expressed in a letter just arrived from a private concern, a self insurer under the New York compensation law. It refers one of its employees for hernia treatment by the injection method and states that, though it is not responsible in this case under the compensation law, it is lending the employee the money for the treatment. But, then, this concern has had actual experience with this treatment in numerous cases over a period of years, and, besides, it has no "authority" to exercise or maintain. In this respect, at least, federal employees and relief workers are less fortunate in the fairness and intelligence of their boss.

S. W. FOWLER, M.D., New York.

TESTS FOR ALCOHOLIC INTOXICATION

To the Editor:—Referring to the letter on this subject in THE JOURNAL, April 23, page 1386, it is to be questioned whether Dr. Reinke has given indication of experience that justifies him in deprecating laboratory methods of determining intoxication.

Dr. Reinke's first point was that the personal equation of various drinkers was not sufficiently considered. He believes that the alcoholic brain concentration lethal for an infant would not have nearly so deleterious an effect on a drunkard. What has such a surmise to do with alcoholic drivers? The articles Dr. Reinke refers to did show, at least, that there are among "adults" definite levels of concentration of alcohol beyond which a state of intoxication or actual drunkenness is present. Reference was made in one of the articles to the fact that these levels were the same whether found in habitués or in occasional drinkers, since increased toleration is due to increased oxidation of the alcohol and to other less important factors which combine to rid the system of alcohol faster as toleration increases.

When the charge against a driver is such that the question of his degree of intoxication becomes important, and if any specimen, taken from him with his consent, is found to show an unquestioned state of drunkenness and testimony is so offered at trial, the defense will secure testimony from those who clinically observed the defendant at the time the specimen was taken. This testimony will of course be that they (lay witnesses or otherwise) believe the defendant to have been then drunk. The scientifically obtained testimony may then be thrown out on the ground that a drunken person cannot give valid consent (to the taking of the specimen from him). Afterward defense testimony will all too often lead to acquittal of the prisoner. However much such a state of affairs indicates needed changes of law, it has nothing to do with the science and justice of the tests in question.

ROBERT C. KEYS, M.D., Fairfield, Conn.

THE PROTECTIVE ACTION OF CERTAIN SULFANILAMIDE DERIVATIVES IN EXPERIMENTAL INFLUENZA INFECTIONS

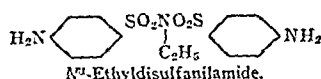
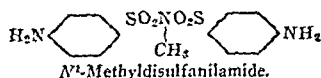
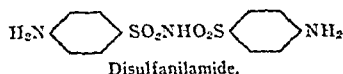
To the Editor:—The recent report before the American Chemical Society meeting of the details of synthesis of a series of sulfanilamide derivatives by Crossley, Northey and Hultquist (Sulfanilamide Derivatives: I. Amino-Aryl-Sulfonamido-Aryl-Sulfonic Acids and Amino-Aryl-Sulfonamido-Aryl-Carboxylic Acids; II. Disulfanilamide and Related Compounds; III. Strepto-N-Polysulfanilyl-Sulfanilamides and Related Compounds, *J. Am. Chem. A.*, to be published) together with the statement that they have been found to be effective protective agents in experimental infections with influenza virus makes us feel that some of the preliminary experimental work on which these statements are based should be presented to the members of the medical profession for critical analysis.

A series of almost 100 sulfanilamide derivatives have been subjected to preliminary examination for protective action in experimental influenza virus infections. The Puerto Rico strain of human influenza virus, originally obtained from Dr. Francis of the Rockefeller Institute for Medical Research, was employed throughout the entire series. The procedure for the intranasal administration of the virus to mice has been described in detail by Francis and only the essential principles are given here. Lungs from infected mice are removed aseptically and ground up with sterile sand and saline solution. The final suspension is approximately 1:1,000; this is centrifuged and from 0.01 to 0.02 cc. administered intranasally to mice previously anesthetized with ether. Care is taken to see that all the material so administered is aspirated. The mice are of the Swiss strain, are from 4 to 6 weeks of age and weigh from 10 to 14 Gm.

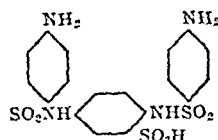
Control animals so infected begin to show symptoms from the second to the seventh day following administration. The duration of the incubation period bears an inverse relationship to the quantity and virulence of the virus administered. The acute symptoms are roughened coat, apathy, evidence of fever and marked dyspnea. Death occurs from ten to seventy-two hours after the onset of acute symptoms and the most characteristic lesion post mortem is massive consolidation of both lungs. Animals do not recover after showing acute symptoms.

The first two substances examined in this series were sodium sulfanilyl-sulfanilamide, which had previously been described by A. R. Dochez and C. A. Slanetz (The Treatment of Canine Distemper with a Chemotherapeutic Agent, Sodium Sulfanilyl-Sulfanilate, *Science* 87:142 [Feb. 11] 1938) to be an effective chemotherapeutic agent in the protection of animals experimentally infected with dog distemper virus, and of sulfanilamide itself, which had been described by S. M. Rosenthal, J. G. Wooley and Hugo Bauer (The Chemotherapy of Choriomeningitis Virus Infection in Mice with Sulfonamide Compounds, *Pub. Health Rep.* 52:1211 [Sept. 3] 1937) to be effective in treating experimental choriomeningitis of mice. Neither of these substances had any effect on the course of experimental influenza infections.

Up to the present time two types of substance have been found capable of influencing the course and eventual outcome of the experimental disease. The first is disulfanilamide and is represented by three members: disulfanilamide, *N*¹-methyl-disulfanilamide, and *N*¹-ethyl-disulfanilamide, having the structural formulas:



The second type substance is represented by 2,5-bissulfanilamido-benzene-sulfonic acid, with the structural formula:



This experimental procedure was followed throughout the entire series: mice were divided into groups of tens, and after infection treated according to the following scheme:

Group A. Untreated controls.

Group B. Ten mg. of drug (subcutaneously) at one, twenty-four, forty-eight and seventy-two hours after infection.

Group C. Ten mg. of drug (subcutaneously) at twenty-four, forty-eight and seventy-two hours after infection.

Group D. Ten mg. of drug (subcutaneously) at forty-eight and seventy-two hours after infection.

Group E. Ten mg. of drug (subcutaneously) at seventy-two hours after infection.

It was found that all the drugs described in this paper were capable of protecting infected animals provided a moderate infecting dose of the virus was administered; that is, when the infecting dose was of such an order as to produce acute symptoms after an incubation period of at least four days. When the infecting dose was increased to the point at which the control groups showed acute symptoms by the second or third day after infection, with the majority of deaths on the third or fourth day, the drugs were completely ineffective. This is illustrated in the accompanying protocols. The key letters of the groups

are the same as those already described. Disulfanilamide was employed in both of these experiments. In the first instance a moderate infecting dose was administered, while in the second series a much stronger infecting dose was administered.

SERIES 1.—Moderate Infecting Dose

Group	Percentage Mortality on				
	3d Day	6th Day	9th Day	12th Day	15th Day
A	0	80	100	10	10
B	0	0	0	0	0
C	0	0	10	10	10
D	0	20	30	30	30
E	0	30	50	70	70

SERIES 2.—Strong Infecting Dose

Group	Percentage Mortality on				
	3d Day	6th Day	9th Day	12th Day	15th Day
A	90	100	10	...	...
B	80	90	100	...	...
C	90	100	10	...	...
D	100	100	10	...	...
E	90	100	10	...	...

The differences in activity of the substances described here are small. The protocols which are given for disulfanilamide are almost identical with those for the other substances and will be published in detail in the near future.

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M. L. CROSSLEY, Ph.D.

E. H. NORTHEY, Ph.D.

Calco Chemical Company Research Laboratory.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

REMOVAL OF TATTOO MARKS

To the Editor:—Please advise me as to the methods of removing tattoo marks.

LEON A. FRANKEL, M.D., Philadelphia.

ANSWER.—Tattoo marks are of two kinds, intentional, supposedly decorative, and accidental, from powder explosions, falling in cinders and similar accidents. In all of them the pigment is deposited in the corium, deeper in the accidental than in the intentional cases, and therefore more difficult to remove. Many different processes have been used:

1. Rubbing the skin is said to remove tattoo marks when it is done persistently. Janson (Eine einfache Methode der Entfernung von Tätowierungen, *Dermat. Wchnschr.* 101:894 [July 20] 1935) anesthetizes with procaine and epinephrine and then rubs the skin of the mark with a stiff brush until it bleeds. He then applies an ointment of 2 per cent anesthesin in zinc oxide ointment. The treatment must be repeated a number of times. On the skin of the trunk or arm it is satisfactory but not on the hand or fingers. G. H. Klövekorn (*ibid.* 101:1271 [Oct. 12] 1935) substantiates Janson's assertions.

2. Fahlbusch and Holtz (Eine neue Methode zur Entfernung von Tätowierungen, *München. med. Wchnschr.* 83:1598 [Sept. 25] 1936) use live steam from an inhalation kettle carried by a rubber tube with a glass nozzle to the area to be treated. The skin is cleansed with ether and alcohol, then anesthetized with procaine and epinephrine, and the borders of the area protected with zinc paste, a proper margin being allowed beyond the visible border of the mark. After the steam has been applied for a few seconds, the epidermis can be rubbed off, exposing the cutis and the pigment particles. The steam is kept on this until it turns white; then a burn liniment is applied and internal sedatives are given to alleviate the pain after the effect of the

local anesthetic has worn off. After twenty-four hours the wound is dressed with a bland ointment, and in from two to six days the pigment may be brushed off or picked out of the wound with little pain. The patient can return to work after three days. The scar is thin and soft. No infection occurs if ordinary surgical care is used, for the steam disinfects the wound.

3. Thurn (Narbenlose Entfernung von Tätatuerungen, *Med. Klin.* 33:1134 [Aug. 20] 1937) advocates the use of salicylic collodion applied until the area oozes, then pressing in fine salt crystals. This causes sharp pain for from twenty to thirty seconds. Local anesthesia may be necessary. Dry dressings are applied, which, with the crust, must be removed on the third day, bringing with it the pigment. The epithelium is restored in from six to eight days. One treatment is usually enough, but repetition is sometimes necessary.

Others use pyrogallic plaster, carbon dioxide snow, digestives, ultraviolet rays or tattoo in a skin colored enamel to cover the marks. Karpelis, who seems to have had experience, disapproves of these methods (Ueber Entfernung von Tätatuerungen, *München. med. Wchnschr.* 84:529 [April 2] 1937) and the use of electrolysis but favors surgical excision for small marks and the galvanocautery for the larger ones. With this he shells off the epidermis and then attacks the pigment, which thus has become visible. He is careful to treat 1 or 2 mm. beyond the border of the mark to ensure getting it all. The cold cautery he values much less. He also favors the method of cross hatching the skin fairly deeply with a scalpel, stoppage of bleeding and then rubbing in finely pulverized potassium permanganate. A dry dressing is then applied.

The most popular method of all and one that is still approved by experts is that of Variot. A 50 per cent solution of tannic acid is tattooed into the mark just deep enough to avoid any considerable bleeding. Then the silver nitrate pencil is rubbed over this area until it becomes black. The black crust separates in about sixteen days. If the mark is an accidental one and particles of carbon remain, the crust should be removed earlier and the remaining particles of pigment curetted out. M. D. Shie (A Study of Tattooing and Methods of Its Removal, *THE JOURNAL*, Jan. 14, 1928, p. 94) recommends anesthesia with procaine and epinephrine when the mark is on the face or ears to control bleeding, which interferes with the penetration of the tannic acid solution. The pain is so slight when the tattooing is done rapidly that it is inconsequential.

For discrete carbon particles, H. C. L. Lindsay (Surgical Removal of Powder Tattoo, *THE JOURNAL*, Nov. 6, 1937, p. 1530) recommends excision of each blue point with a cataract knife. Suturing is seldom necessary if the operator is careful to make small wounds. Another surgical method is to loosen a flap containing the whole tattoo mark, turn it over and pick out the pigment, then right it and suture it in place.

Like many other procedures for which many methods are used, the best results are obtained by becoming expert in a few of the methods and choosing carefully the one best suited to the case in hand.

VISCEROPTOSIS

To the Editor:—A woman, aged 30, shows roentgenographic evidence of colon and stomach ptosis. She has constipation and dragging pain in the umbilicus. Will a surgical belt or support of any kind aid the patient?

ROBERT D. KANE, M.D., Elmhurst, N. Y.

ANSWER.—The treatment of gastro-enteroptosis is best outlined by consideration of the various types that occur. A. P. Cawadias has mentioned three: 1. The well known Stiller syndrome, which is constitutional and is synonymous with an asthenic constitution and a microsplanchnic hypovegetative constitution (Pende). These individuals have a long narrow thorax, there is a general scarcity of fat, and x-ray examination shows a general enteroptosis including elongation of the stomach, colon and kidneys. Psychologically these patients tend to be introverts. 2. The neurotic type, in which the symptom complex comprises headaches, insomnia, depression and a general anxiety about their condition. These patients are prone to believe that they have a serious abdominal disease and to restrict their diet, thus creating a vicious circle, the resulting loss of weight further increasing the visceroptosis. 3. Rarely, gastro-enteroptosis characterized by pain which is not relieved by the horizontal position. This is due to perivisceritis and follows some primary inflammation. The treatment depends on attacking the underlying cause.

Goldthwait has shown that in many individuals there is a definite sagging of the diaphragm and lower ribs. Improvement in these patients, he says, can be obtained only by the use of corrective exercise. In connection with the remodeling of the body, jackets are often of help. These should include some definite support to the back. Belts and supports are of

relatively little value unless accompanied by other forms of treatment. Diet is of vast importance and when a good increase in weight can be obtained the results are almost invariably good. Exercise, both in the lying and in the erect position, is an essential part of therapy. The use of belts should be considered as only an accessory in the treatment. Psychotherapy may accomplish more than any other one measure in the neurotic type. It should be remembered that there are a great many patients with extreme visceroptosis who are symptom free and it is a mistake to emphasize low-lying organs found accidentally or incidentally by x-ray examination.

TINNITUS AURIUM

To the Editor:—A woman, aged 55, complains bitterly of a roaring and buzzing noise in the head which makes her feel as if the whole body were throbbing and affects her sleep. She thinks the condition is affected by taking salt or sugar. She has had this trouble for five years. The menopause began in June 1930 and was complete by February 1934. With the terrific roaring in the head she is exceedingly nervous and often has insomnia. The nurse can tell from her appearance when an attack is about to come. A severe attack lasts several days but she is rarely free from all the noise. Sometimes with it there is twitching of the face muscles of mild degree. The roaring has increased during the last three years. With an attack the pulse rate goes from 74-80 to 100-110 and she becomes alarmed. Sometimes it awakens her from a sound sleep. She has been treated since 1927 for pulmonary tuberculosis, which is but slightly active today. In 1931 she had at one time a blood pressure as high as 200/110 and the same year it fell to 130/80, which is approximately the pressure she has maintained since then. I have tried theelin, emmenin, a low salt diet and ergotamin without benefit. There have been several phases of "nervous breakdown" during these ten years. The urino is normal. Inflation of the eustachian tube for a mild catarrhal condition led to no benefit. Suggestions for treatment would be appreciated.

M.D., New York.

ANSWER.—Most cases of tinnitus are subjective in character. There are, however, unusual occasions in which the noise may be demonstrated to an observer. Head noises may arise from conditions within the ear and in the immediate neighborhood of the ear. In practice the most persistent and annoying forms of tinnitus are usually seen in connection with disease of the internal ear and its central pathways. Tinnitus due to conditions within the external auditory canal and the middle ear are apt to be much less annoying and much more amenable to treatment. In the neighborhood of the ear transmitted noises from arteries, veins or aneurysms are occasionally observed. The use of drugs such as acetylsalicylic acid may produce tinnitus without apparently any permanent or demonstrable effect on the hearing.

The description of the sounds varies from low, rushing, murmuring sounds usually assigned to disease in the middle ear to high pitched, hissing, whistling, ringing noises generally thought to be due to difficulties in the internal ear. From this type of head noise to a type characterized by distinct musical character is only a short step. Such noises may be designed as whistling, ringing, bell-like in character. One step further carries one into the realm of noises that begin to partake of hallucinations. A patient will say that an old melody recurs over and over again; perhaps some song not heard since early childhood. The last step is, of course, distinctly hallucinatory in character. Voices and other sounds are heard and associated with mental disturbances of a profound character.

Again it is not easy to say how much the so-called nervous constitution has to do with these noises. Certainly, a persistent tinnitus may make the most self-contained person nervous and, on the other hand, it should not surprise any one that the highly strung person would be apt to exaggerate the distress he experiences.

It is therefore plain that the patient's description of the noises and the degree of reaction to them must in some measure be related to the nature and location of the disease area as well as be influenced by the temperament of the sick person. The patient is of a nervous character. Her complaint, with its intermissions, is such that it could be due to some disturbance in the end organ of hearing and its central pathways. She also has had a hypertension and, while the blood pressure is lower now than it was, there still may be changes of a vascular character in the brain sufficient to produce the symptoms. There is no statement made as to the absence or presence of a hearing defect. The presence of a hearing defect, especially a severe one, might help to locate the lesion in the cochlea. It is just such deafness of an auditory nerve type that produces tinnitus of the more severe and persistent kind. From time to time also tinnitus of a stubborn and troublesome character may precede by many years the onset of such a deafness.

Experience states that treatment of the type of tinnitus described is apt to be without benefit. Psychotherapy, encour-

agement of the patient to accept her condition with as much philosophy as possible, and the avoidance of fatigue and nervous strain as well as the use of mild sedatives are all indicated. As much as possible one should attempt to discover the cause and by so doing influence for the better this most aggravating complaint.

POSSIBLE ANOREXIA NERVOSA

To the Editor.—A woman, aged 34, an executive in a college, has a usual weight of from 130 to 140 pounds (59 to 63.5 Kg.); her highest weight was 160 pounds (72.6 Kg.) in 1927. Her menses began at 16 and occurred from two to four times a year until 1933, lasting four to five days. In 1932 she began to lose weight, the greatest loss occurring from December 1934 to March 1936, at which time it reached 86 pounds (39 Kg.). Constipation has always been severe. Cathartics have been taken in large amounts and many stools daily resulted. Epigastric distress and flatulence prevented the usual diet and from 1934 to 1936 it was limited to fruits and vegetables. In 1932, swelling of the face, thighs and legs, without pitting, developed. She felt heat excessively and could not stand a warm room. There was palpitation on exertion. When in March 1936 her weight reached 86, she was studied in a hospital. There was no fever. The blood pressure was 100 systolic, 60 diastolic. General examination was negative except for wrinkling of the skin of the legs, as if from edema. Laboratory work failed to reveal any evidence of organic disease. The urine was normal, the blood urea nitrogen 7, total blood protein 5.8, albumin 4.2, globulin 1.5, metabolic rate minus 20, cholesterol 289, red blood cells 4.7 million, hemoglobin 100 per cent and white blood cells 15,700. Five days later after she had gained 10 pounds (4.5 Kg.) the red blood cell count was 4.0 million, hemoglobin 80 per cent, white blood cells 9,300. A chest roentgenogram was negative. The skull roentgenogram showed a normal sella turcica, and the optic fields and the fundi were normal. The stools were normal and x-ray examination of the gastro-intestinal tract gave negative results. The diagnosis lay between malnutrition from dietary restriction and Simmonds' syndrome. Accordingly the patient was given a 3,500 calory diet with added vitamins and 4,000 cc. of fluids. Within two months her weight had risen to 130 pounds (59 Kg.), which was held to April 1937. Her complaints were not relieved, however, as she continued to feel heat and itching in her face and tightness of the thighs, although no swelling was evident, and the stools were loose, whether frequent or infrequent. No menstruation had occurred since 1933. It was thought advisable to try endocrine therapy, and injections of the gonadotropic factor from the urine of pregnancy and anterior pituitary extract were given, a total of 40 cc. in 1937. Menstruation occurred three times, in May, June and July. She improved subjectively during the spring and summer, but in the fall began to feel bad generally, did not feel like eating, tired easily, and acquired edema of the face and extremities. The output of urine was low, a pint or less daily. Ammonium chloride from 60 to 90 grains (4 to 6 Gm.) daily caused some increase in output with improvement in symptoms, but its effect seemed to wear off and salyrgan was used a few times at weekly intervals with benefit. The urine was normal, as was the general examination. The bowels were moving five times daily with cathartics, and there was a good deal of flatulence. She was unable to do without cathartics. Enemas were without effect. Her weight now (December 1937) is 117 pounds (53 Kg.). What diagnostic possibilities are there? What further studies should be made to clarify the diagnosis? What therapy is indicated? Should she be put to bed with high calory feeding as was done in 1936, thereby sacrificing her position? Should endocrine therapy be continued, possibly in greater amounts? Thyroid extract was first used in 1934. She was intolerant to even one-tenth grain (0.0065 Gm.) three times a day.

M.D., New Jersey.

ANSWER.—The clinical syndrome described appears to be due to dietary restriction or, if one prefers the term, "anorexia nervosa." Simmonds' disease, which depends on actual destruction of the anterior lobe of the hypophysis, for all practical purposes, is excluded from consideration by the long history associated with the case and by the absence of any objective evidence of hypophysial involvement. Anorexia nervosa, while usually regarded as a functional disorder, manifests itself at times in a manner suggestive of a physiologic disturbance of the anterior lobe of the hypophysis, with subsequent failure to provide thyrotropic and gonadotropic substances in normal amounts. The multiplicity of bizarre symptoms mentioned by this patient is not unusual in cases of anorexia nervosa and appears to depend on the existence of an unstable nervous constitution.

Further diagnostic studies might include repeated determinations of the basal metabolic rate and of the concentration of cholesterol of the blood as well as examination of the deep reflexes. The history of edema is somewhat suggestive of the presence of atypical or mild myxedema. If an actual deficiency of the thyroid gland is present, some sluggishness of the reflexes may be demonstrated (Chaney, W. C.: Tendon Reflexes in Myxedema, *THE JOURNAL*, June 21, 1924, p. 2013). It may be noted parenthetically that edema of dependent parts is sometimes encountered in cases of anorexia nervosa for reasons that are not entirely clear; possible qualitative alterations of the proteins of the plasma and reduction in the colloidal osmotic pressure of the serum have been suggested as explanations. The presence of irritability of the bowel suggests two possibilities for investigation: search for parasites in the stool and examination of the gastric juice, for anacidity is commonly

encountered in cases of anorexia nervosa. If the stools contain more than the normal amount of fat the possibility of the presence of pancreatic disease must be considered; in particular, studies of the enzymatic activity of the contents of the duodenum should help to determine this.

Assuming that all organic disturbances can be eliminated from consideration and that the diagnosis of anorexia nervosa can be established, treatment is most difficult. The best results, as a rule, are obtained by prolonged rest in bed, by psychotherapy, by forced feeding and by elevation of the basal metabolic rate. Use of thyroid extract should be persisted in even if mild signs of intolerance are noted when its administration is begun and an attempt should be made to maintain the basal metabolic rate at a level of about —5 per cent. Use of insulin to increase appetite and food intake is helpful in certain instances. Avoidance of laxatives, assurance of an adequate intake of food and an ample supply of vitamins or of protein and of bulky foods should contribute to increase in weight and strength and to amelioration of the constipation and irritability of the bowel. The menstrual cycle often is restored by this treatment alone and, as a rule, it is well to forego the use of such preparations as gonadotropic substance and extract of the anterior lobe of the pituitary gland until the basal metabolic rate and the body are restored to normal. Relapses are to be expected and their occurrence does not imply necessarily that either diagnostic or therapeutic errors have been made.

DANGERS OF PARAFFIN

To the Editor.—What are the dangers and uses of paraffin? The paraffin is melted and put through a mechanical spray under two pounds of pressure, which causes the paraffin to leave the machine in a powder form. The room measures approximately 20 by 18 feet and is ventilated by a suction fan. The worker is supplied with a small mask with a cloth ventilator but states that this mask is unsatisfactory in use. Isn't it true that there is considerable danger in breathing the air in a room where paraffin is mixed with the air? What type of mask would be most satisfactory to use for this work?

M.D., West Virginia.

ANSWER.—Pure paraffin wax is widely regarded as non-toxic, but possibly it may possess some carcinogenic properties. The misuse of paraffin in cosmetic surgery has been associated with paraffinomas. Work around molten paraffin, particularly if the paraffin is overheated, is more uncomfortable and nauseating than dangerous and is important because of associated distaste for food and possible resulting malnutrition. R. Prosser White (The Dermatogoses or Occupational Affections of the Skin, London, H. K. Lewis & Co., 1934) has reported that in a group of women and girls long employed under conditions in which they were literally bedaubed with paraffin wax during their work, none experienced the least inconvenience or distress, either internally or externally. Bridge, whom White cites, has found no evidence of skin disorder among paraffin candle makers. Liquid petrolatum or wax taken internally or applied to the skin rarely has proved detrimental, although the use of liquid petrolatum in constipation has been associated with eczema ani; but here mechanical abrading may constitute a factor (Gibson, Robert: Risk of Liquid Paraffin in Chronic Constipations, *Brit. M. J.* 1:876 [May 14] 1927).

In industry, paraffin oils and closely related petroleum derivatives have been associated with industrial dermatoses, acne, furunculosis and possibly tar cancer. However, it seems possible to demarcate for toxicologic purposes pure, solid paraffin and at least some of the paraffin oils.

In the printing industry the paraffin spray is sometimes used as a rapid drier for ink. It has been reported that paraffin dust or flakes ball up in the respiratory passages and may be coughed up or blown out of the upper respiratory areas. The best solution to this problem is to be found in a local exhaust system rather than in general room ventilation. A suitable small appliance may be designed to entrap all the extraneous paraffin dust. The wearing of ordinary masks or respirators is not entirely satisfactory, since the waxy nature of the paraffin tends to seal off the filtering surface of the mask to an extent greater than ordinary dust. Thus breathing is hampered and workers may decline to wear a mask of the type that actually serves as a filtering medium. It may prove desirable to provide the worker or workers with a light type of positive pressure respirator, which continually furnishes respirable air from a suitable source remote to the contaminated workroom atmosphere. Many types of respirators are available through commercial sources, some of which are recognized as suitable by the United States Public Health Service or by the Bureau of Mines.

MAKING OF FOOTPRINTS

To the Editor:—To obtain footprints, the old fashioned method is still mostly used, of having the patient stain his sole on an ink pad and step on a paper. This method gives a good picture but has the disadvantage of soiling the foot with ink and, therefore, it cannot be used in cases of ulcers or sore spots. When I saw the method of fingerprinting used in the postoffice (put the finger on a glass plate covered with some fat or paraffin and then on a piece of paper which is afterward stained with a developing fluid, resulting in a nice picture without marring the patient's skin) I thought that this method could also be used for footprinting. On the suggestion of the postmaster I wrote to the Postmaster General's Department in Washington for the formula of the developer and also the kind of fat used but received the answer that it is not permissible to render such information. When I wrote to the Bureau of Investigation in Washington, Mr. Hoover answered that he could not give me the formula but that I should communicate with the Faurot Identification System in New York. This company, however, did not give me the formula, which, it said, is antiquated, but recommended its own product. On further investigation I found that a German manufacturer of chemical products, I. G. Farbenindustrie A. G., sells a developer for this purpose; its formula also is secret. For the sake of completeness Freiberg's method has to be mentioned of staining the foot with a solution of tannic acid and then the paper with ferric chloride; the compound is ink, and a black but not clear picture is obtained. Now I am wondering whether you would be able to find the formula of the developer for printing, with the method of staining with petrolatum or fat. I think that not in medical literature, but in criminalistic books on dactyloscopy more information can be found. I am not in a hurry to get this information, so please take your time.

M.D., Illinois.

ANSWER:—There appears to be no publication which gives information on the newer methods of taking fingerprints and footprints. On the whole, the ink method has been the most satisfactory. Chemical formulas are used by a number of police departments; our correspondent believes that a formula may be found that will leave an imprint where there is the greatest pressure. Certain parts of the foot may produce a greater amount of secretion than other parts, and the print at that point would be heaviest; that is, the pressure itself would have much to do with it. Therefore it is difficult to see why there would not be just as much success with the ink method as with some of the "chemical formula" preparations on the market, the exact compositions of which have not been divulged.

The method known as the Faurot method consists of a specially treated paper, which is used with a chemical pad that presumably does not leave a stain or discolor the skin.

Another method for fingerprinting or footprinting, which has been used with some success, is placing the fingers in a coating of petrolatum and the use of osmic acid fumes subsequently, which will bring out a good black print. Also in the case of petrolatum, Fleming's reagent fumes will bring out a very good black print or, if desired, the reagent may be used with or without petrolatum.

NECROSPERMIA

To the Editor:—What is the cause of necrospemia? What is the treatment? Can you give references to the recent literature? A young married man, in good health, wants a child. Endocrinologic and gynecologic examinations of his wife show her to be in apparently normal condition. Examination of the husband revealed nonmotile spermatozoa of a count of 96,000,000. Repeated specimens showed the same condition, even when material was collected in an aseptic, chemically clean receptacle. Injections of antuitrin-S over a period of two months have not produced any change. The pH of the semen was 7.5.

M.D., Pennsylvania.

ANSWER:—Necrospemia may be artificially induced by subjecting the condom to heat, which is often done by patients who fear that the specimen might get cold while en route to the doctor. Necrospemia is always present if the specimen is examined a long time after coitus.

One must distinguish between those cases in which the testicle produces only dead spermatozoa and those in which the spermatozoa are killed after leaving the testicles by some pathologic condition in the genito-urinary tract. In the latter condition a painstaking examination of the entire tract, including in some cases a cysto-urethroscopy, must be done. The presence of many pus cells in the expressed prostatic vesicular fluid is significant, not because pus kills spermatozoa but because it indicates that some disease is present which should be investigated. In some cases a congested prostate may be the cause, simply because the relief of the congestion cures the condition. It must be admitted however that sometimes examination, even if exhaustive, may fail to find the cause.

The Huhner test is sometimes of distinct value in such cases. Spermatozoa have been found alive in the female genitals after coitus, whereas repeated condom and other examinations have always shown only dead spermatozoa.

Testicular necrospemia may be caused by the application of x-rays to or in the neighborhood of the testicles even when a protective device had been used by the dermatologist or physical therapist.

A recent discussion of necrospemia may be found in Max Huhner's *Diagnosis and Treatment of Sexual Disorders in the Male and Female Including Sterility and Impotence*, Philadelphia, F. A. Davis Company, 1937.

OLD ULCER SCAR CAUSING NAUSEA

To the Editor:—A white woman, aged 36, complains of nausea without vomiting. She has had an appendectomy and a cholecystectomy, and six months ago a posterior gastro-enterostomy was performed for relief of partial pyloric obstruction. The cause of the obstruction as found at operation was an old ulcer scar. The nausea is apparently due to bile in the stomach, coming through the operative opening, because draining the stomach relieves the nausea. The stomach contents are chiefly bile. There is no free hydrochloric acid; the total hydrochloric acid is only 11 points. Is there any way to prevent the bile from entering the stomach? Is there any way to avoid the nauseating effect of the bile, other than intravenous administration of calcium gluconate, which has been fairly successful in this case?

R. V. BRANDON, M.D., McDonough, Ga.

ANSWER:—The case described presents many difficulties. While more surgical treatment, such as a lateral anastomosis between the afferent and efferent loops, would eliminate the reflux of bile into the stomach, it probably is unnecessary and might be followed by other untoward symptoms. Bile in the stomach is not necessarily a source of trouble. In fact, all the bile has frequently been shunted into the stomach in case of irreparable obstruction of the common duct without subsequent gastric symptoms. There is usually some reflux of bile and duodenal contents into the stomach after gastro-enterostomy. Paterson suggested that much of the virtue of the operation lay in the reduction of gastric acidity by the regurgitation of bile.

Achylia suggests that the patient is suffering from asthenia universalis, or Stiller's disease. Increasing the weight and attention to mental problems would probably accomplish more than a new operation.

SPASMS OF LEGS AT NIGHT

To the Editor:—A man, aged 62, in good general health, has occasional attacks of muscle spasms of the legs during sleep. He has never had attacks during the day. The calf of the leg, the popliteal space or the ankle is involved. On one occasion the two feet were affected at the same time. The spasm passes off spontaneously in from ten to fifteen minutes. He is a moderate smoker. The patch test for tobacco gives only slight reaction. The blood pressure is normal. Is there any contraindication to the use of tobacco? Has the condition any relation to thrombo-angiitis obliterans? What suggestions can you give for diagnosis?

M.D., New York.

ANSWER:—Since the spasms of the muscles occur at night, it is doubtful that the condition is related to thrombo-angiitis obliterans. Such symptoms are at times encountered in arteriosclerosis both of the peripheral vessels and of the spinal cord and the spinal roots. Likewise they may be the expression of tumors or inflammatory disorders of the last named structures. The possibility exists that the spasms from an unexplained increase in muscular irritability would have to be considered, in which case they should be readily relieved by mild sedatives. There would not be the same contraindication to the use of tobacco as in the instance of thrombo-angiitis obliterans. However, there is some evidence to indicate that smoking may produce a degree of vasoconstriction, a condition which presumably would have an unfavorable influence on the occurrence of such spasms.

DIPHTHERIA ANTITOXIN

To the Editor:—How late after the contraction of diphtheria is antitoxin effective?

R. L. CLINE, M.D., Lakeland, Fla.

ANSWER:—When diphtheria antitoxin is administered in sufficient dosage within the first two days of the disease, few patients fail to recover. The history of duration is often unreliable because of the insidious onset of diphtheria. Diphtheria antitoxin is efficient only in relation to its action on the free toxin; for the toxin that has combined with the body tissues, antitoxin is ineffective. Since there may be free toxin at any stage of acute diphtheria, antitoxin should always be given. The percentage of fatalities mounts rapidly with the increased number of elapsed days before antitoxin injection. Virulence of the infecting organism and degree of susceptibility of the patient are always important factors in any case of diphtheria. Patients have recovered who did not receive any antitoxin prior to the sixth or seventh day of the disease. It is wise to administer antitoxin in all active cases even if late in the disease.

NARCOLEPSY

To the Editor:—A youth, aged 18 years, 67 inches (170 cm.) tall, weighing 168 pounds (85 Kg.), has had narcolepsy since he was about 3 years of age. He is contemplating marriage in the near future and I should like advice as to whether or not it would be advisable to sterilize him.

R. C. FAUST, M.D., Eugene, Ore.

ANSWER.—Narcolepsy, or Gelineau's syndrome, as far as it is known, is not hereditary or familial. Therefore there is no reason to vasectomize a given individual with narcolepsy for purposes of sterilization. Cataplexy, which is another form of Gelineau's syndrome, must not be confused with familial periodic paralysis. The latter is familial. Assuming that the boy has a hypothalamic pituitary lesion resulting in adiposity, overweight and attacks of uncontrollable desire to sleep, it is suggested that he be placed on benzedrine sulfate in doses of 10 mg. two or three times daily. An anterior pituitary extract may be also given subcutaneously.

BLOOD IN ERYTHEMA MULTIFORME—LESIONS ON PENIS

To the Editor:—What blood picture has been observed in erythema multiforme? How often are lesions observed on the penile mucosa similar to those reported as occurring on the oral mucosa? I recently cared for a young white man with typical lesions of erythema multiforme following a mild attack of influenza. The cutaneous eruption was accompanied by a severe aphthous stomatitis (labial, gingival, buccal, palatal and pharyngeal mucosa) and by similar lesions of the glans penis. The history and Wassermann reaction were negative for syphilis and all lesions cleared in less than two weeks' time under local and general supportive treatment only.

M.D., Oklahoma.

ANSWER.—There is no distinct blood picture in erythema multiforme. Occasionally in the bullous type there may be some increase in the eosinophils.

Often in the bullous type and in the papular type there are lesions on the penile mucosa and on the vaginal mucosa, as well as on the mucous membranes of the mouth.

HYSTERECTOMY IN TABES

To the Editor:—A woman, aged 43, who states that she never had any primary or secondary lesions of syphilis and who was not treated until she developed tabetic symptoms, complains that she is unable to pass urine without pressing on the bladder. She also complains that her abdomen is getting bigger and that she has some abdominal discomfort. On examination there is a large fibroid uterus the size of a seven months pregnancy. What is the advisability of operation on tabetic patients?

M.D., Michigan.

ANSWER.—Assuming the general physical condition of the patient to be satisfactory, particularly from the cardiovascular standpoint, the fibroid uterus may be removed without regard to the tabes and with no reference to the state of the patient's serologic reactions in the blood and spinal fluid at the time of operation. Following operation it is of course advisable that she be under treatment for syphilis in order to guard against the remote possibility of difficulty with wound healing.

NO MEDICAL TREATMENT FOR CATARACT

To the Editor:—A man, aged 33, has a matured cataract in the right eye. An operation has been advised. Is there any other method recognized in treating the condition at this stage? He has been convinced by persons who were treated by a doctor in Philadelphia to try another procedure; that is, by some electrical apparatus. M.D., Pennsylvania.

ANSWER.—There is no medical or electrical treatment that will influence a mature cataract. Even though the patient is only 33 years of age it is advisable to submit to surgical treatment if for no other reason than the cosmetic purpose. Probably the worst ophthalmologic quackery of all time is the treatment of cataract by other than surgical means. The time may come when it can be done, but at present our knowledge is too limited.

MENTHOL IN URTICARIA

To the Editor:—What are the effects of administration of menthol in angioneurotic edema? For how long a period can it be given? Can it produce any toxic symptoms, and what are these symptoms?

M.D., New York.

ANSWER.—Menthol is used externally only as a mild antipruritic in angioneurotic edema. While it also acts as an antipruritic when given internally, its effect as such is so uncertain and slight that there is no reason for employing it as a substitute for such drugs as epinephrine and ephedrine. The primary objection to its use by mouth is the irritating effect on the gastric mucosa. Toxic symptoms may occur in

rare cases when given by mouth. Champeau reports grave but not fatal symptoms of cardiovascular collapse in a child, aged 4½ years, from ingestion of 6 mg. of menthol (*Bull. Acad. de méd.* 114:448 [Nov. 19] 1935). Parenterally, toxic symptoms may be produced. The symptoms are those of paralysis of the central nervous system, especially the medulla.

LATE RESULTS OF RADIUM APPLICATIONS TO CERVIX

To the Editor:—What is the longest known delayed radium reaction from applications to the cervix?

M.D., South Carolina.

ANSWER.—Vesicovaginal fistulas ascribable to radium applications usually occur within three months, not infrequently as late as six months after radium treatment, rarely after an interval of a year. Deep sclerosing lesions of the pelvis, simulating a malignant condition and really ascribable to radium reaction, may be followed by necrosis of the tissues even several years subsequent to the use of radium.

It is of the utmost importance that emphasis be placed on the factor of distance from the irradiated tissues in the susceptibility to burns and fistulas. The quantity of radium used is a lesser factor in contrast with the nearness of the application and the amount of screening employed.

SALICYLATES IN PULMONARY TUBERCULOSIS

To the Editor:—Should salicylates, especially acetylsalicylic acid, be used by patients suffering from active pulmonary tuberculosis, who, because of their tendency to raising blood, are properly known in the sanatorium as "streakers"? It has been my experience that a large percentage of such patients "streak" more easily if acetylsalicylic acid is used, so much so that I avoid its use. A former member of this staff had a similar experience. VIRGIL F. NEUMANN, M.D., Norwich, Conn.

ANSWER.—There is much justification for the suspicion that salicylates and acetylsalicylic acid cause increased blood flow in patients who "streak" blood. They have a slight tendency to increased blood flow, although the cause is not known; presumably it is due to a slight lowering of viscosity or to a change in coagulability. The degree is not great, however, and the risk is practically nil, even in serious cases. In only a few cases out of many thousands, in the experience of a large institution, has it been necessary to avoid such treatment, and then a shift to aminopyrine and caffeine has met the requirements with no ill effects.

ACHOLIC STOOLS FROM HEPATITIS

To the Editor:—Is it possible to get obstructive jaundice, with complete absence of bile in the stools, due entirely to a hepatitis, with no obstruction in the bile duct outside the liver? The question has come up in a young person who has been receiving antisyphilitic treatment.

M.D., North Carolina.

ANSWER.—It is entirely possible, in cases of severe hepatitis of the toxic type, particularly that associated with antisyphilitic treatment, for a patient to get acholic stools without any obstructive manifestations in the larger bile ducts. This case resembles that of a severe arsphenamine type of jaundice.

SALT AND CALCIUM IN TROPICS

To the Editor:—My daughter in Brazil has been urged by me to take salt in that tropical heat, whereas her dentist tells her not to because of her lack of calcium in nursing a big baby of 6 months. To what extent would the calcium need affect the need for salt in excessive perspiration? They are on the equator at sea level.

M.D., Michigan.

ANSWER.—The fact that the patient is nursing a baby is no contraindication to taking salt for excessive perspiration. If the patient has a negative calcium balance, as is apparently suspected by her dentist, this should be corrected by the usual method of fortifying the diet with adequate available calcium. The patient should receive both the salt and the calcium.

SMALLPOX VIRUS FOR HERPES SIMPLEX

To the Editor:—In *Queries and Minor Notes* in the April 30 issue of THE JOURNAL is a question regarding the prevention of herpes simplex. I should like to add a supplementary remark with the hope that it will provoke further discussion. Smallpox virus has been advised for the immunization of patients to herpes simplex. It is done once a week for eight weeks in exactly the same way as vaccination against smallpox. It seems to be effective. It would seem important to reconcile the effect of smallpox virus with the effect of the virus isolated from herpes simplex.

HAROLD J. HARRIS, M.D., Westport, N. Y.

Medical Examinations and Licensure

COMING EXAMINATIONS

STATE AND TERRITORIAL BOARDS

Examinations of state and territorial boards were published in THE JOURNAL, June 11, page 2028.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* Examinations will be held in all centers where there is a Class A medical school and five or more candidates who wish to write the examination, June 20-22 and Sept. 12-14. Ex. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia.

SPECIAL BOARDS

AMERICAN BOARD OF INTERNAL MEDICINE: *Written examination* will be held at various centers of the United States and Canada, Oct. 17. *Final date for filing applications is Sept. 1.* Chairman, Dr. Walter L. Biering, 406 Sixth Ave., Suite 1210, Des Moines, Iowa.

AMERICAN BOARD OF OPHTHALMOLOGY: Washington, D. C., Oct. 8, and Oklahoma City, Nov. 15. *All applications should be filed immediately and case reports, in duplicate, must be filed not later than sixty days before the date of examination.* Sec., Dr. John Green, 3720 Washington Blvd., St. Louis, Mo.

AMERICAN BOARD OF PEDIATRICS: Detroit, October 26; Rochester, N. Y., November 13; and Oklahoma City, November 15. Sec., Dr. C. A. Aldrich, 723 Elm St., Winnetka, Ill.

Maine March Report

Dr. Adam P. Leighton, secretary, Maine Board of Registration of Medicine, reports the written examination held at Portland, March 8-9, 1938. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Seventeen candidates were examined, 15 of whom passed and two failed. One physician was licensed by reciprocity and one physician was licensed by endorsement after an oral examination. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
George Washington University School of Medicine.....	(1937)		83.5
Georgetown University School of Medicine.....	(1937)		87.9
University of Maryland School of Medicine and College of Physicians and Surgeons.....	(1937)		84.6
Boston University School of Medicine.....	(1933)	83.6	84.8
Harvard University Medical School.....	(1935)	85.9	84.7
Tufts College Medical School.....	(1937)	76.5	82.7
University of Rochester.....			83.8
Jefferson Medical College.....			82.2
School of Medicine and.....			75.6
University of Montreal.....			76.8
Université de Paris Fac.....			75.9

School	FAILED	Year Grad.	Per Cent
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin.....	(1929)		68.1
National University of Athens School of Medicine.....	(1935)		55.6

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Long Island College Hospital.....	(1893)		Vermont

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Harvard University Medical School.....	(1935)		N. B. M. Ex.

Arizona April Report

Dr. J. H. Patterson, secretary, Arizona State Board of Medical Examiners, reports the written examination held at Phoenix, April 5-6, 1938. The examination covered 10 subjects and included 100 questions. An average of 75 per cent was required to pass. Two candidates were examined, both of whom passed. Six physicians were licensed by reciprocity and two physicians were licensed by endorsement. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
University of Illinois College of Medicine.....	(1937)		75.8*
University of Vermont College of Medicine.....	(1936)		81.3

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
School of Med. of the Division of Biological Sciences.....	(1931)		Illinois
Tulane University of Louisiana School of Medicine.....	(1932)		Louisiana
Washington University School of Medicine.....	(1934)		Missouri
Albany Medical College.....	(1930)		New York
Cleveland College of Physicians and Surgeons.....	(1912)		Ohio
Western Reserve University School of Medicine.....	(1925)		Ohio

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists.....	(1928)		N. B. M. Ex.
George Washington University School of Medicine.....	(1934)		N. B. M. Ex.

*This applicant has completed the medical course and will receive the M.D. degree on completion of internship.

Alabama Reciprocity and Endorsement Report

Dr. J. N. Baker, secretary, Alabama State Board of Medical Examiners, reports eight physicians licensed by reciprocity and two physicians licensed by endorsement from Jan. 12 through April 18, 1938. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Emory University School of Medicine.....	(1933)		Georgia
Northwestern University Medical School.....	(1922)		Iowa
Tulane Univ. of Louisiana School of Medicine (1935).....	(1935)		Louisiana
Columbia Univ. College of Physicians and Surgeons.....	(1928)		New York
Temple University School of Medicine.....	(1935)		Penna.
University of Tennessee College of Medicine.....	(1934)		Tennessee
Marquette University School of Medicine.....	(1937)		Wisconsin

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists.....	(1932)		N. B. M. Ex.
University of Maryland School of Medicine and College of Physicians and Surgeons.....	(1925)		N. B. M. Ex.

Missouri Reciprocity and Endorsement Report

Dr. Herman S. Gove, director, Medical Licensure, reports fifteen physicians licensed by reciprocity and one physician licensed by endorsement on January 6, February 14 and April 8, 1938. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
University of Arkansas School of Medicine.....	(1937)		Arkansas
College of Medical.....	(1937)		New Jersey
University of Illinois.....	(1935)		Illinois
State University of.....	(1933)		Iowa
Kansas Medical College.....	(1908)		Kansas
University of Kansas.....			Kansas
Johns Hopkins Univ.....			Maryland
University of Nebraska.....			Nebraska
University of Oklahoma.....			Oklahoma
Medical College of the.....			S. Carolina
Baylor University Co.....			Texas
Medical College of Virginia.....	(1933)		Virginia
McGill University Faculty of Medicine.....	(1935)		Canada

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
Harvard University Medical School.....	(1934)		N. B. M. Ex.

Rhode Island April Examination

Mr. Robert D. Wholey, chief, Division of Examiners, reports the oral, written and practical examination held by the Board of Examiners in Medicine at Providence, April 7-8, 1938. The examination covered 20 subjects and included 50 questions. An average of 80 per cent was required to pass. Five candidates were examined, all of whom passed. Five physicians were licensed by endorsement after an oral examination. The following schools were represented:

School	PASSED	Year Grad.	Per Cent
Tufts College Medical School.....	(1936)		87.5
Cornell University Medical College.....	(1935)		87
Jefferson Medical College of Philadelphia.....	(1935)		83.5
University of Toronto Faculty.....			81
Regia Università degli Studi.....			
Medicina e Chirurgia.....	(1934)		83

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical.....			B. M. Ex.
Georgetown Univ.....			B. M. Ex.
Johns Hopkins Univ.....			B. M. Ex.
Harvard University.....			B. M. Ex.

Iowa Reciprocity and Endorsement Report

Mr. H. W. Grefe, director, Division of Licensure and Registration, reports fifteen physicians licensed by reciprocity and five physicians licensed by endorsement from Jan. 3 through April 20, 1938. The following schools were represented:

School	LICENSED BY RECIPROCITY	Year Grad.	Reciprocity with
Loyola University School of Medicine.....	(1933)		Illinois
Northwestern Univ. Medical School.....	(1937)		Illinois, Kansas, Michigan
Rush Medical College.....	(1931)		Illinois
Wayne University College of Medicine.....	(1937)		Michigan
University of Minnesota Medical School.....	(1926)		Minnesota
Washington University School of.....			New York
Creighton University School of.....			Missouri
Univ. of Nebraska College of Me.....			Kansas
Marquette University School of Medicine.....	(1936)		Nebraska

School	LICENSED BY ENDORSEMENT	Year Grad.	Endorsement of
College of Medical Evangelists.....	(1937, 2)		N. B. M. Ex.
University of Colorado School of Medicine.....	(1934)		N. B. M. Ex.
Harvard University Medical School.....	(1934)		N. B. M. Ex.
Columbia Univ. College of Physicians and Surgeons.....	(1927)		N. B. M. Ex.

Book Notices

Heart Disease in General Practice. By Paul D. White, A.B., M.D., Assistant Professor of Medicine, Harvard University Medical School, Boston. National Medical Monographs. Edited by Morris Fishbein, M.D. Cloth. Price, \$3. Pp. 338, with 47 illustrations. New York: National Medical Book Co., Inc., 1937.

Dr. White, the author of this book, is one of the leading cardiologists of the United States. In the preface he states that the book is an "attempt to serve the family physician by compiling a brief but practical and forceful summary of our present knowledge of the diagnosis, prognosis and treatment of heart disease." He employs the question and answer method and has included many of the questions of the general practitioner. The book is divided into four parts: the historical introduction (7 per cent), the field of diagnosis including symptomatology, signs, blood pressure, electrocardiography and x-ray examination (48 per cent), prognosis (4 per cent) and treatment (34 per cent); the remainder consists of preface and index. Selecting at random pregnancy and heart disease as one of the common problems of the general practitioner, one finds this subject considered with a single question and a two page answer. The discussion does not include prevention or treatment of congestive failure. Taking the management of acute coronary thrombosis as another question, there is an excellent summarization of the modern concept of diagnosis and the treatment of this common problem. Another question is that of treatment of cardiovascular syphilis, in which Dr. White advocates potassium iodide, mercury or bismuth compounds and nearsphenamine up to 0.4 Gm., which might lead a practitioner into serious complications. On the whole the book is well arranged and the discussions of the various topics represent current views in modern cardiovascular practice. One might be critical of the attempt to summarize such a broad subject in such a small book. The volume will prove interesting reading to a number of practitioners, and they hold the ultimate answer as to whether or not Dr. White has achieved his purpose.

The British Encyclopaedia of Medical Practice Including Medicine, Surgery, Obstetrics, Gynaecology and Other Special Subjects. Under the General Editorship of Sir Humphry Rolleston, Bt., G.C.V.O., M.D. Volume VI: Gonorrhoea to Hydrotherapy. Cloth. Price, \$12. Pp. 602, with 96 illustrations. London & Toronto: Butterworth & Co. (Publishers), Ltd., 1937.

From "gonorrhoea" to "hydrotherapy" is the field covered by the sixth volume of this encyclopedia, the leading titles including some fifteen pages on gout, seventy-five pages on topics beginning with "hema," twenty-seven pages on the hand and 150 pages on the heart. Other important headings concern heat, heredity and hernia. The authors of note in this volume are Colonel Harrison, who writes on gonorrhea on the basis of a large experience during the Great War and since, and many leading British physicians whose names are associated with diseases of the blood. Whitfield discusses the hair and Reginald Miller in a succinct statement gives the important facts regarding rheumatic heart disease in children. The name of C. P. Symonds is associated with articles on headache and on hydrocephalus. The volume is fully up to the standard of the previous volumes in typography, illustration and the quality of the material.

The Income Structure of the United States. By Maurice Leven. Assisted by Kathryn Robertson Wright. Cloth. Price, \$1.50. Pp. 177. Washington, D. C.: Brookings Institution, 1938.

The more the income problem is studied the more complex it becomes. It is not always the same as money received or expended. There are still important survivals of "barter economy." There are wide variations as to industries and as to occupations within industries. Business incomes are modified by lobbying, legislation, trade associations and business combinations. Farmers' incomes are affected by legislation and cooperative organizations as well as by location. The influence of unions on labor incomes is steadily growing. The cyclic fluctuations change total income and also its distribution among individuals and groups. Seasonal conditions, strikes, technological developments and the existence of largely immobile and

stranded populations greatly affect the picture. Hourly wages appear to have increased somewhat since 1929, but as the length of the working week has declined "total annual wages in 1936 were, however, below the preponderance level." There are, however, numerous exceptions to this statement. Of eighty-nine industries, thirty-one had higher weekly earnings in June 1937 than in 1929. If increase in productivity is sufficiently raised, living standards may not suffer from shortened hours. The decline in incomes since 1929 has hit professional workers somewhat harder than the rest of the population. "The professional incomes of physicians in the 1936 array were between 18 and 30 per cent lower than in the 1929 array; lawyers' incomes were between 18 and 38 per cent lower in the array for 1936 than in that for 1929." Wages and salaries have shown wider fluctuations and somewhat more of a recovery from the depression low than "entrepreneurial withdrawals." Dividends and interest were least affected by the cyclic change. While "most of the employed industrial wage earners seem to have forged ahead of their predepression position by the middle of 1937, this gratifying condition, however, was marred by the fact that in 1937, even before the recession in the latter part of the year, there were still some 8 to 9 million people unemployed in the United States." The latter number is close to the additional wage earners created by the increase in population during these years.

Annual Reprint of the Reports of the Council on Pharmacy and Chemistry of the American Medical Association for 1937 with the Comments That Have Appeared in The Journal. Cloth. Price, \$1. Pp. 201. Chicago: American Medical Association, 1938.

This issue of the collected reports includes the reports on Avertin with Amylene Hydrate (now accepted for New and Nonofficial Remedies), Benzedrine Sulfate (the active constituent of the notorious "pep" pills but a promising drug when its limitations are recognized), Catgut Sutures (a survey of the sterility of the market supply), Evipal Soluble (a comprehensive review of the evidence for the usefulness and limitations of the drug), Histidine Hydrochloride (a study of the usefulness of the drug in peptic ulcer, to be considered in connection with the report rejecting Larostidin, a proprietary brand, for unwarranted and exaggerated claims), Mandelic Acid (an authoritative statement of the limitations of this drug which the Council has now accepted), and Vinethene (a careful study of the evidence for the drug, which the Council has accepted for one year as an anesthetic to be used in short procedures).

Two reports of interest to those who have been following the Council's considerations are those finally rejecting Edwilen and Gonococcus Filtrate (Corbus-Ferry). The Edwilen report represents a thoroughgoing demolition of the exaggerated claims that have been made for this pseudoscientific preparation. The report on Gonococcus Filtrate is the third of a series of reports illustrating the patient carefulness with which the Council considers the evidence for a preparation and the progressing failure of the evidence for Gonococcus Filtrate to substantiate the promise which it at first appeared to show. Another illustration of the Council's recurrent consideration of a product is the report on Pantopon "Roche." Since the omission of this product from New and Nonofficial Remedies in 1931, the Council has at various times been forced to consider promotional material issued by the manufacturer repeating and emphasizing the extravagant and unwarranted claims because of which it had been omitted.

Other reports of outright rejection of products are those on Causalin (Causyth), an unsafe and dangerous preparation proposed for use in arthritis; Glutamic Acid Hydrochloride-Calco, proposed as a conveyor of hydrochloric acid, with unsubstantiated claims of clinical effectiveness, and Larodon "Roche," proposed as a substitute for other well established analgesic and antipyretic drugs and marketed with exaggerated and unwarranted claims.

The Council's constant and increasing interest in vitamin therapy is shown in the following reports: ConDol and Ertren Not Acceptable for N. N. R., a rejection of two high potency vitamin D preparations proposed for use in the treatment of arthritis; Dosage of Preparations Containing Vitamins A and D, an attempt to bring some uniformity into the dosage statements for the various accepted vitamins A and D preparations;

The Use of Hydroquinone as a "Stabilizing" Agent in Preparations Containing Vitamin A, a rejection of such use; Riboflavin, the accepted name for Vitamin B₂; and Thiamin Chloride, the Council's new name for the hydrochloride of Vitamin B₁, and Viosterol (A. R. P. I. Process) in Oil.

The report on omission of Pentobarbital Sodium-Abbott should be mentioned in connection with the Council's interest in nomenclature of drugs. Since 1931 the Council has accepted two brands of pentobarbital sodium. Claiming priority for its product, the Abbott Laboratories has for some time insisted on the use of the proprietary name "Nembutal" for pentobarbital sodium. Perusal of the lengthy report indicates the Council's attitude on the use of proprietary names. It should be read by all who may be disposed to regard such matters as of relative importance. Further exposition of the Council's attitude on nomenclature is found in the report on the controversy with Sir Henry Dale over the name Ergonovine.

Two reports on Sulfanilamide appear, a nomenclature and status report together with reprints of THE JOURNAL editorials giving the warnings which, if obeyed, would have avoided the series of deaths which resulted from the marketing of the ill fated Elixir of Sulfanilamide-Massengill.

At the end of this volume appears a eulogy of George Henry Simmons, whose death deprived the Council on Pharmacy and Chemistry of its founder and American medicine of a worthy and faithful servant.

The Time Has Come . . . By Sir Arthur Hurst, M.A., D.M., Senior Physician to Guy's Hospital. The Harveian Oration Delivered Before the Royal College of Physicians of London on St. Luke's Day, 1937. Cloth. Price, 5s. Pp. 42. London: Headley Brothers [n. d.].

This is the two hundred and eighteenth Harveian oration delivered before the Royal College of Physicians in London. The first of the lectures to be delivered in English was given in 1865, although Harvey left the injunction that the oration should be in Latin. While the name of Harvey is closely associated with his studies of the circulation, he also made fundamental observations on the stomach and the digestion. Sir Arthur Hurst reviews contributions to the advancement of this phase of medical science and in the introduction and in the conclusion of his oration refers to the nature and purpose of the establishment of the Harveian oration. Since the time of Sir Henry Hallford, who was president of the Royal College of Physicians between 1820 and 1844, only one physician, Lord Dawson, has occupied that chair for seven consecutive years.

Baron Constantin von Economo: His Life and Work. By his Wife and by Prof. J. von Wagner-Jauregg. Translated from the second German edition by Ramsay Spillman, M.D. Cloth. Price, \$2. Pp. 126, with illustrations. New York: Ramsay Spillman, 115 East 61st Street, 1937.

Von Economo's researches were fundamental and opened a new pathway to the study of human behavior. His biography is written by his wife, who disavows any pretense to literary style yet by that very factor gives truth and personality to her writings. Few people know that von Economo was an enthusiast in aeronautics, including the balloon and the airplane, holding high office in organizations devoted to such work and sport. During the World War he served with the Austrian army on the Russian front and later in the Tyrol in 1916. Following the death of his brother in the service he returned to Austria to join the Wagner-Jauregg clinic. Von Economo was a learned man who read widely in the classics and was familiar also with art and music. His drawings of portions of the brain and of the special senses are described as "little works of art." He proposed that the brains of great men be saved for scientific study. During his career he twice visited the United States, the last visit, in 1929, including the eastern seaboard from Boston to Miami. He died in October 1931 from a severe angina. The brief record of his life is followed by an appreciation of his scientific work by Wagner-Jauregg and a reprinting of some of his most significant contributions. The name of von Economo is particularly associated with the identity of the condition now called epidemic encephalitis or lethargic encephalitis. Toward the end of his career von Economo was instrumental in establishing in Vienna an institute for brain research. Then he died and his right-hand man, Dr. Horn, survived him but a short time. With them the institute for brain research disappeared. Considering the recent changes that have taken

place in medicine in Vienna, it is perhaps just as well that these scientists should have completed their own contributions and passed on before the inevitable heartbreak that would have come to them in recent years.

Traumatismes du pied et rayons X: Malléoles, astragale, calcanéum, avant-pied. Par Etienne Destot. Préface du Dr Alexis Carrel. Second edition. Paper. Price, 45 francs. Pp. 292, with 156 illustrations. Paris: Masson & Cie, 1937.

Even though this book is by an eminent surgeon of France, carrying a foreword by Alexis Carrel, it is merely a catalogue, with innumerable roentgenographic illustrations, of fractures at the ankle and tarsus. There is little on treatment and practically no method of reduction or immobilization is described or illustrated. Destot was one of the first French surgeons to appreciate the value and the limitations of the roentgen ray in surgery of fractures. From the extensive array of roentgenograms of old improperly healed or reduced fractures of the ankle and tarsus one would be inclined to believe that the x-ray method had been neglected for both immediate diagnosis and position determination of fragments and also for the x-ray record of the proper reduction. There is absolutely no mention of the Boehler salient for the linear determination of reduction of the fracture of the os calcis, and this does seem to offer definite help. Destot died in 1918 following arduous surgical service and roentgen exposure during the war period. This edition has been revised by two admiring pupils and associates. It is a voluminous French essay on fractures of a limited but important part of the body but it does not begin to be a complete treatise of any great practical value to the American industrial or railroad surgeon or general practitioner. The book shows how Destot can adorn the tarsus with beautiful word-flowers, only to have them wilt under the scorn of this practical analysis of their true values.

Pathology. By E. B. Krumbhaar, M.D., Professor of Pathology University of Pennsylvania School of Medicine, Philadelphia. XIX, *Clio Medica: A Series of Primers on the History of Medicine*. Edited by E. B. Krumbhaar, M.D. Cloth. Price, \$2. Pp. 206, with 18 illustrations. New York: Paul B. Hoeber, Inc., 1937.

The little volumes published as a medical historical collection under the title "Clio Medica," begun by the late Paul B. Hoeber, now occupy a sizable area on the book self. Since pathology is basic in the development of every branch of medical science, Krumbhaar's contribution is one of the most significant in the series. He has divided his work into a series of chapters dealing with early concepts, the rise of the anatomic concept in disease, precellular and cellular pathology, and finally integrated pathology. Quite as valuable as the text itself are the series of appendixes dealing with the word "pathology," early chairs for the teaching of the subject, and a chronological list of milestones. There is also a bibliography and a good index. The very concentration of the work inclines to make it well nigh a list of names, dates and accomplishments, yet the author has been able, here and there, to introduce something of literary flavor.

Medico-Legal Aspects of the Ruxton Case. By John Glalster, M.D., D.Sc., Barrister-at-Law, Regius Professor of Forensic Medicine, University of Glasgow, and James Couper Brash, M.A., M.D., F.R.C.S., Professor of Anatomy, University of Edinburgh. Cloth. Price, \$6. Pp. 284, with 172 illustrations. Baltimore: William Wood & Company, 1937.

This is not the kind of book that can be recommended to readers of detective stories. It is a scientific work describing the medicolegal aspects associated with two murders in which the victims were terrifically mutilated. The victims were the wife of a physician and the nursemaid from the physician's home. The doctor was charged with the murders, tried and convicted. From this conviction he appealed and the appeal was dismissed. As it was necessary to reconstruct the bodies from the remains, to determine their sex and to identify them, to analyze the feet and the fingerprints and to make anthropologic studies of the skulls and to reconstruct the face from these portions, the book offers opportunity for a vast amount of instruction on identification. There was also the question of blood stains found on clothing and on the household furnishings and identification of this material. The book is illustrated and should be of special interest to all who carry on medicolegal work.

The Treatment of Clinical and Laboratory Data: An Introduction to Statistical Ideas and Methods for Medical and Dental Workers. By Donald Mainland, M.B., Ch.B., D.Sc., Professor of Anatomy, Dalhousie University Halifax, Nova Scotia, Canada. Cloth. Price, 15s. Pp. 340, with 23 illustrations. Edinburgh & London: Oliver & Boyd, 1938.

This is a welcome addition to the books now available on the statistical method in biologic and medical research. Because of its emphasis on biologic and medical problems and the deletion of all but the most necessary mathematical formulas, it is exceptionally readable. Many important aspects of the statistical method are brought out and illustrated with actual examples. The explanation of the use of the chi square test, for instance, is brief and lucid. In fact, any one with a high school education and a small amount of concentration could readily understand its applicability. For those desiring to go somewhat more deeply into the subject, there is a chapter of supplementary notes which, while more complicated, is nevertheless simply and clearly presented. There would now seem to be no excuse for the presentation of statistically oriented medical papers without some conception of the statistical elements involved and the pitfalls most commonly encountered.

Materia Medica, Pharmacology, Therapeutics and Prescription Writing for Students and Practitioners. By Walter Arthur Bastedo, Ph.M., M.D., Sc.D., Consulting Physician, St. Luke's Hospital, New York. Fourth edition. Cloth. Price, \$6.50. Pp. 778, with 81 illustrations. Philadelphia & London: W. B. Saunders Company, 1937.

This edition has been revised and many new parts have been added. The textbook is designed particularly for students and practitioners; the author states in the preface that it is for the practicing physician rather than for the scientist. It differs from other standard textbooks of this type in that it consists essentially of the author's lectures and, while it is interesting reading, it is less suitable for detailed reference work since it does not contain (any more than a lecture would contain) the bibliography on which the material is based. The author makes full acknowledgment of many source books. All the newer drugs are discussed in full detail and the evaluation of the current references to the literature is a reflection of the author's ability in this field. Examples of such critical review are the discussions of the marihuana habit, cyclopropane, mandelic acid and sulfanilamide. The volume includes discussion of prescription writing and posology. This edition should have the success of its predecessors.

Sbornik posvyashchenny 35-letiyu vrachebnoy, nauchnoy, prepodavatel'skoy i obshchestvennoy deyatelnosti zasluzhennogo deyatelya nauk Professora Aleksey Ivanovicha Abrikosova. Pod redaktsiy Prof. P. D. Solovova. [Collection Celebrating 35 Years of Professional, Scientific and Communal Activity of Professor Aleksey Ivanovich Abrikosov.] Cloth. Price, 11 rubles, 50 kopecks. Pp. 364, with illustrations. Moscow & Leningrad: Gosudarstvennoe izdatel'stvo biologicheskoy i meditsinskoy literatury, 1936.

This is a collection of papers by the staff of the Botkin Hospital, Moscow, presented to the pathologist A. I. Abrikosov on the occasion of the completion of thirty-five years of his scientific and pedagogic activities. The major part of the papers is devoted to anatomic and pathologic subjects. They reflect a fairly high level of accomplishments in the field in which Abrikosov, their teacher and co-worker, is a prominent figure.

The Public Assistance Worker: His Responsibility to the Applicant, the Community, and Himself. Edited by Russell H. Kurtz. Cloth. Price, \$1. Pp. 224. New York: Russell Sage Foundation, 1938.

The extraordinary expansion and transformation of nearly all phases of public assistance during recent years have called for new attitudes and ability to meet new tasks on the part of those concerned with public assistance. Permanent state public welfare agencies have succeeded state emergency relief administrations and are seeking to coordinate all types of public assistance. Each chapter is by a different author, yet the book as a whole is consistent and well organized. The old attitudes toward standards of need, residence requirements and other traditional qualifications for relief which characterized the old Poor Law are disappearing. Cash relief, with the individual right to choose how it will be expended, is approved. The problems of health and medical care are considered, with thorough recognition of the necessity of individualizing the problem and giving the patient the right to choose his own physician. While it is stated that "there is a strong case to be made for

health insurance," the objections to it on the ground that it "lowers the quality of medical care, the quality of the medical man, and the quality of the patient's conception of health" and also that "no compulsory insurance scheme would provide medical care to all persons who need services at low cost" are recognized. Emphasis is rightly laid on the problems of housing, nutrition and income in relation to disease and the place of public health departments in caring for community conditions.

Diseases of the Blood. By Cyrus C. Sturgis, M.D., B.S., Professor of Medicine, University of Michigan Medical School, Ann Arbor, Michigan, and Raphael Isaacs, A.B., A.M., M.D., Associate Professor of Medicine, University of Michigan Medical School, Ann Arbor, Michigan. National Medical Monographs. Edited by Morris Fishbein, M.D. Cloth. Price, \$3. Pp. 302, with one illustration. New York: National Medical Book Co., Inc., 1937.

During the last few years there has been a remarkable growth of interest in the diseases of the blood. Several large monographs, beautifully illustrated with color plates, have appeared within a short time. While these large books have been welcomed by hematologists, clinical pathologists and internists, there has been a decided need for a small, reasonably priced, lucid and authoritative book particularly planned for the general practitioner. This monograph admirably fulfills these requirements. The broad experience of the authors in the clinical management of diseases of the blood, as well as their well known contributions to hematologic research, provided them with a wealth of material from which to select the subject matter. Details of technic and illustrations of the various blood cell types have been omitted. The relative length of the subject matter in the various chapters parallels the clinical importance of the various diseases. Thus the chapter on pernicious anemia occupies fifty-seven pages, while that on sickle cell anemia occupies but nine pages. Proper emphasis is given to the treatment of the various diseases of the blood and the blood-forming organs. The book is written in a clear, concise, eminently readable style and is printed in large, legible type. It richly deserves the favorable reception it is certain to receive from the general practitioner.

Treatment in General Practice. By Harry Beckman, M.D., Professor of Pharmacology at Marquette University School of Medicine, Milwaukee, Wis. Third edition. Cloth. Price, \$10. Pp. 787. Philadelphia & London: W. B. Saunders Company, 1938.

The third edition of this work is no larger than the previous two editions, because experience has enabled the author to eliminate some material and to condense some portions of the book. There has been reorganization of the material by including diabetes with the endocrine diseases and giving obesity and malnutrition a separate section. The new section which has been added deals with nutritional disturbances, diseases of the liver and bile passages, disturbances of water, salt and protein balance, those caused by heat, and the anemias. A number of conditions are now considered for the first time, notably alkalosis, Ménière's disease, physical allergy, prophylaxis of the venereal diseases, colon consciousness, and some ear, nose and throat disturbances. Obstetric conditions, drug addiction and some tropical conditions have been eliminated from consideration. The work continues to be one of the most practical that are available in the field of therapy, is easily understood, and for the most part is abreast of the times. However, some new promising forms of therapy which are not perhaps as yet well established have not been included, notably in the treatment of psoriasis and in pneumonia.

English-German and German-English Medical Dictionary. By Joseph R. Waller, M.D., and Moritz Kaatz, M.D. Teil 2: Deutsch-Englisch Englisch-Deutsch und Deutsch-Englisches medizinisches Wörterbuch. Seventh edition by Dr. Franz von Braltenberg. Cloth. Price, 7 marks. Pp. 238. Leipzig & Vienna: Franz Deuticke, 1935.

The seventh edition of this useful little dictionary is to all intents and purposes simply a new printing of the sixth edition. It contains no new material, and the old definitions are unchanged. The noteworthy feature of the book is, as before, the limitation of its vocabulary to strictly medical terms. It includes a surprisingly large number of words within its small confines. The medical student, general practitioner or layman unfamiliar with medical terminology will find it very helpful.

The Diary of a Surgeon in the Year 1751-1752. By John Knyveton, Licentiate of the Society of Apothecaries; Doctor of Medicine of the University of Aberdeen; Teacher of Midwifery to and Man Mid-Wife in Infirmary Hall; Surgeon's Mate, H. M. S. Lancaster. Edited and transcribed by Ernest Gray. Cloth. Price, \$2.50. Pp. 322, with 9 illustrations. New York & London: D. Appleton-Century Company, Incorporated, 1937.

The lives of physicians are romantic. They are particularly romantic in the period covered by this diary. The diary is pieced together much as one might piece together a piece of fiction based on the diaries of Evelyn, Pepys and Walpole. This book is apparently based on the autobiography of Thomas Denman, to which are added statements by his son-in-law Matthew Baillie as they appeared in his seventh edition of "Practice of Midwifery." Names and dates are changed in some instances. This leads to errors, such as when the diarist speaking of the treatment of scurvy, presumably in 1751, refers to James Lind's "On the Diseases of Europeans in Hot Climates," which did not appear until 1768. The book presents an interesting picture, and the diary method gives it a tone of veracity which adds to its flavor.

Sbornik posvyashchenny 35-letney vrachebnoy, nauchnoy i obschestvennoy deyatelnosti professory Vladimira Nikolaevicha Rozanova. Redaktor: Prof. P. D. Solovov. [Collection Celebrating 35 Years of Professional, Scientific and Communal Activity of Professor Vladimir Nikolaevich Rozanov.] Cloth. Pp. 359, with illustrations. Moscow & Leningrad: Gosudarstvennoe meditsinskoe izdatelstvo, 1934.

This is a collection of papers presented by the staff of the Botkin Hospital, Moscow, to V. N. Rozanov, chief of the surgical division of the hospital, on the occasion of completion of thirty-five years of his clinical, pedagogic and investigative activities. Most of the papers deal with surgical subjects. The quality of the surgical work reflected in these contributions is a compliment to Rozanov, who has contributed much to the development of the surgical service at the Botkin Hospital.

Practical Bacteriology, Haematology and Animal Parasitology. By E. R. Stitt, M.D., Sc.D., LL.D., Paul W. Clough, M.D., Chief of Diagnostic Clinic, Johns Hopkins Hospital, Baltimore, and Mildred C. Clough, M.D. Ninth edition. Cloth. Price, \$7. Pp. 961, with 208 illustrations. Philadelphia: P. Blakiston's Son & Company, Inc., 1938.

The standards of the ninth edition of this reference book have been well maintained. As in the past, special emphasis has been laid on the interpretation and diagnostic significance of laboratory procedures. Advance in this field has necessitated considerable revision and addition especially with regard to filtrable viruses and hematology. An entirely new chapter on the fungi has been prepared, and it was necessary largely to rewrite the chapter on immunity and hypersensitiveness. The concise and careful descriptions in this book keep it a practically necessary fixture in the laboratories of all those physicians carrying out any but the simplest technics.

The Tercentenary of Harvard College: A Chronicle of the Tercentenary Year 1935-1936. Cloth. Price, \$4. Pp. 492, with 37 illustrations. Cambridge, Massachusetts: Harvard University Press, 1937.

This volume includes the story of the tercentenary, beginning with organization and preparation, and a description of the university, of the special settings provided, a chronicle of the tercentenary year, and a complete report of each of the days. Included also are the addresses made by various speakers, the congratulatory messages and a complete list of all those who collaborated on the various occasions. The volume is handsomely published by the Harvard University Press and is a fitting memorial of a great occasion.

Blodinamika proteidiv. Pld redaktsleyu akademika O. O. Bogomoltsya. [Blodynamics of Proteins.] Paper. Price, 5 krb. 50 kopecks. Pp. 241. Klier: Vidavnistvo Akademii Nauk URSR, 1938.

The discussion of the nature of proteins presented in this volume is abreast of the times and is quite exhaustive. The volume emanates from the Institute of Clinical Physiology, a branch of the Ukrainian Academy of Sciences. Since it is written in the Ukrainian it will be not accessible even to those workers—physiologic chemists—who would naturally be most interested in it. Such valuable contributions should, in the interest of interchange of ideas, be rendered into one of the more accessible languages.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts: Pneumonia Attributed to Lowered Resistance Resulting from Industrial Accident.—A workman, in the course of his employment, August 22, ran a sliver into his finger. Infection followed and on September 5 he sought treatment at a first aid hospital maintained by his employer. There he was treated for eight days and then discharged. He lost no time from work. The following April, about eight months after the accident, he contracted pneumonia and died. His widow was awarded compensation under the Michigan workman's compensation act, on the theory that the infection from his finger injury "caused his system to run down, with a lowering of resistance, so as to make him susceptible to pneumonia." The employer appealed to the Supreme Court of Michigan.

At the hearing before the department of labor on the widow's claim for compensation, the widow testified that the deceased, after he had been discharged from the employer's first aid station, continued to suffer pain in his injured finger; that he would wake up in the middle of the night and bathe his finger in epsom salts and hot water; that after the injury he lost weight and became irritable, and that progressively his system ran down so that he caught the cold which resulted in the fatal pneumonia. It was testified, too, that the decedent perspired heavily from his work and that he stood in a place where he might easily have caught cold from a draft. There was other slight evidence that the deceased had lost weight following his injury and thereafter worked with a bandage over his gloves. Medical testimony in response to a properly framed hypothetical question attributed the pneumonia to decedent's lowered resistance caused by the infection in the finger.

It is well settled, said the Supreme Court, that if a person, as the result of an industrial accident, becomes so run down and his resistance is so lowered that the injury contributes to pneumonia, and this is borne out by medical experts, recovery may be had under the Michigan workmen's compensation act. The Supreme Court of Michigan has no right to pass on the weight of the testimony, even though it might readily reach a different conclusion than that of the trial tribunal. There being some testimony to support the widow's claim, this court must affirm the award.

The award in favor of the widow was accordingly affirmed, although modified in some respects not material to this abstract. —*Seifman v. Ford Motor Co. (Mich.)*, 276 N. W. 472.

Workmen's Compensation Acts: Diabetic Gangrene Attributed to Trauma.—Sutliff had been suffering from diabetes mellitus for about two years, gradually losing weight but continuing to work. In the course of his employment he "bumped" his right leg. He finished his day's work, but when he arrived home he was pale and limped. That evening his wife noticed a small red spot on the inside of his right leg at or about the knee. She then applied a bandage, saturated with alcohol, to his right knee to relieve the pain. He worked the next day until noon, when his leg became so painful that he was forced to quit work. A physician, called the following day, found a small red spot on the outside of his knee but noticed no abrasion or break of the skin. Hot dressings and an electric pad were applied in accordance with the physician's orders but the injured workman grew worse. A few days later a blister appeared three or four inches below the knee, which "showed signs of wet gangrene." Death occurred about one month after the accident. The attending physician certified that "The Primary Underlying Cause of death was Diabetes Mellitus Duration 2 yrs."; that a contributory cause was "diabetic Gangrene Duration 1 mo."; and that the disease or injury was in no way related to the occupation of the deceased. The

industrial commission denied compensation to the widow and she appealed to the Supreme Court of Minnesota.

In determining the origin of the gangrene, apparently no importance was attached to the application of the bandage saturated with alcohol or of the hot dressings and electric pad. Two medical experts testified on behalf of the widow, one of them the attending physician, and their testimony, said the court, may have "made a prima facie case." A physician who appeared as a witness on behalf of the employer testified, however, that there was no causal relation between the accident and the workman's death; in his judgment, if the accident had played a part in the development of the gangrene, the effect of the trauma would have appeared where the injury occurred, if there was "a break in the skin in that area." The fact that the blister appeared elsewhere meant, according to this witness, that the accident had nothing to do with it; there must have been a break in the skin from some other cause. If there was a break in the skin at the toes, the trouble would work upward through the lymphatics, but such conditions do not work downward in that way. Such a disorder as that from which the deceased died does not develop without some point of entry. The record does not show whether the testimony of this witness referred to the development of moist gangrene or of infection or of both.

The causal relation, said the Supreme Court, between the accident and the resulting condition of Sutfief was obviously a question of fact for the triers of fact, the industrial commission. This court, as a court of review, cannot try such issues. Its only authority was to determine "whether there is any evidence tending to support a given finding, and whether the evidence conclusively establishes a particular fact," both of which "are deemed questions of law." The court concluded that there was sufficient evidence on which the industrial commission could base its judgment and accordingly affirmed the order of the industrial commission denying compensation to the widow.—*Sutfief v. New Richland Produce Co. (Minn.)*, 275 N. W. 692.

Workmen's Compensation Acts: Massage as Constituting "Medical Services."—The employee received an injury to his back and on the recommendation of his attending physician obtained the services of an experienced masseur, who administered treatment under the supervision and control of the physician. In a proceeding under the workmen's compensation act by the employee, the masseur filed a claim to collect the amount due him for the treatment administered. The trial court entered a decree ordering the claim paid, and the insurer appealed to the Supreme Judicial Court of Massachusetts.

An insurer, said the court, under the workmen's compensation act may be required to furnish as part of the compensation to which an injured employee is entitled "adequate and reasonable medical and hospital services, and medicines if needed, together with the expenses necessarily incidental to such services." The words "medical services" have been held to include the services of a nurse or trained attendant rendered under the direction and control of a physician. *Meuse's Case*, 262 Mass. 95, 159 N. E. 636. Where, as in the present case, massage treatments are necessary, are prescribed by the attending physician and are given under his supervision and control they, the court said, constitute "medical services" within the meaning of the workmen's compensation act.

The massage treatments were given more than two weeks after the time of the employee's injury. The workmen's compensation act in its original form required the insured to furnish medical and hospital services only during the first two weeks following an employee's injury. Subsequently the act was amended to authorize the board in its discretion to require the insurer to furnish such services for a longer period "in unusual cases" and in "cases requiring specialized or surgical treatment." The insurer contended that the words "specialized or surgical treatment" should be taken to mean only that type of treatment which can be given by a physician or a surgeon who is a "specialist." In the opinion of the court, however, the words "specialized . . . treatment" do not limit treatment to such as can be given by a physician who is an expert. It is common knowledge, the court observed, that in modern times prac-

titioners of medicine in the treatment of their patients not infrequently call to their aid persons not physicians or surgeons whose experience, knowledge and training enable them to contribute treatment beneficial to the patients. Roentgen and other light treatments, the application of heat, massage, and other treatments by persons specially trained and equipped are often prescribed by physicians to aid in the cure or in the relief of their patients. The court thought that massage prescribed by an attending physician and given under his supervision and control by an experienced masseur was "specialized . . . treatment" within the meaning of the act.

The decree entered by the trial court in favor of the masseur was therefore affirmed.—*Haggerty's case (Mass.)*, 11 N. E. (2d) 583.

Contraceptives: Right of Municipality to Regulate Distribution of Contraceptives.—An ordinance of Knoxville, Tenn., makes it unlawful for any person other than a licensed physician or a registered pharmacist to sell, give away or otherwise distribute "any appliance, drug or medicinal preparation intended or having special utility for the prevention of conception and/or venereal disease." In no event is distribution to be authorized to persons 18 years old and under. The defendant, who operated a small stand from which he sold articles such as candy, chewing gum and razor blades, was convicted of violating this ordinance by selling condoms. He appealed to the Supreme Court of Tennessee.

The defendant insisted that the ordinance was invalid because it gave to a special group of merchants privileges which it denied to others, in violation of provisions in the state constitution. He argued that the handling of condoms does not require any special or technical knowledge. Condoms, he argued, may be compared to "patent medicines" in that they are prepared ready for immediate use and sold to consumers in the original packages, without further preparation or instructions and without the necessity of any special or technical knowledge on the part of the vender.

If, said the Supreme Court of Tennessee, any possible reason can be conceived to justify a classification contained in a legislative enactment, it will be upheld and deemed reasonable. The classification contained in the ordinance under consideration, the court thought, was natural and reasonable. Certainly, the prohibition of the sale of contraceptive goods, except by a licensed pharmacist or by a licensed physician and then only to persons more than 18 years of age, tends to preserve public morals as well as the health and safety of the people of the community. It cannot be doubted that the indiscriminate sale of contraceptive goods by pedlers and vending machines, at stores and filling stations, is a menace to the morals and health of the people. Under the charter of the city of Knoxville (chapter 412, Private Acts, 1923) the city is given broad and full power "To define, prohibit, suppress, prevent, and regulate all acts, . . . and all other things whatsoever detrimental to the health, morals, comfort, safety, convenience or welfare of the inhabitants of the city." The ordinance in question, said the court, is valid and constitutional and accordingly the court affirmed the judgment of the trial court.—*McConnell v. City of Knoxville (Tenn.)*, 110 S. W. (2d) 478.

Society Proceedings

COMING MEETINGS

- American Association for the Study of Neoplastic Diseases, Baltimore, June 23-25. Dr. Eugene R. Whitmore, 2139 Wyoming Ave. N.W., Washington, D. C., Secretary.
- American Urological Association, Quebec, Canada, June 27-30. Dr. Clyde L. Deming, 789 Howard Ave., New Haven, Conn., Secretary.
- Maine Medical Association, Bar Harbor, June 26-28. Dr. F. R. Carter, 22 Arsenal St., Portland, Secretary.
- Medical Library Association, Boston, June 28-30. Miss Janet Dix, 2 East 103d St., New York, Secretary.
- Minnesota State Medical Association, Duluth, June 29-July 1. Dr. E. A. Meyerding, 11 West Summit Ave., St. Paul, Secretary.
- National Tuberculosis Association, Los Angeles, June 20-23. Dr. Charles J. Hatfield, 7th and Lombard Sts., Philadelphia, Secretary.
- West Virginia State Medical Association, White Sulphur Springs, July 11-13. Mr. Joe W. Savage, Public Library Building, Charleston, Executive Secretary.
- Wyoming State Medical Society, Laramie, Aug. 7-9. Dr. M. C. Keith, 186 South Center St., Casper, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1927 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them. Titles marked with an asterisk (*) are abstracted below.

American Journal of Cancer, New York

32: 495-654 (April) 1938

- *Comparative Study of Reducing Substance (So-Called Glutathione) of Blood in Normal, Malignant and Nonmalignant Conditions. A. E. Osterberg, R. J. Coffey, J. A. Borgen and C. F. Dixon, with technical assistance of Elizabeth V. MacLay, Rochester, Minn.—p. 495.
- Studies on Exchange of Potassium Between Tumor Cell and Medium. A. Lasnitski.—p. 513.
- *Epidermoid Carcinoma in Osteomyelitis: Case Report. J. H. Harrison, Boston.—p. 527.
- Development of Sarcoma in Mice Injected with Hormones or Hormone-like Substances. E. L. Burns, V. Sontzeff and L. Loeb, St. Louis.—p. 534.
- Transplantable Uterine Rat Sarcoma of 100 per Cent Transmissibility. J. A. Pollia, Los Angeles.—p. 545.
- Sarcoma Formation in an Autologous Graft of Mammary Tissue. A. Fischer, Copenhagen, Denmark.—p. 549.
- Respiratory Quotients of Normal and Leukemic Mouse Lymphoid Tissue. J. Victor and J. S. Potter, New York.—p. 554.
- Ability of Tumor Tissue to Oxidize the Fatty Acids in Vitro. E. Ciaranfi, Naples, Italy.—p. 561.
- Comparative Effect of 200 Kilovolts of X-Rays and Gamma Rays on Pupae of *Drosophila Melanogaster*: I. Determination of "Equivalent Roentgen" Value for Gamma Rays: II. Summation Experiments with X-Rays and Gamma Rays. J. H. Muller, New York.—p. 565.

Epidermoid Carcinoma in Osteomyelitis.—Harrison reports a case of chronic (eighteen years) osteomyelitis of the tibia with epidermoid carcinoma in the sinuses extending up the anterior, medial and lateral aspects of the leg, with invasion of the soft tissues and bone. Following amputation up to the mid thigh the patient made a striking recovery from an advanced state of general physical debility and cachexia. She is well and without evidence of metastasis two years after operation. When epithelial cells during the process of regeneration are exposed to the products of chronic inflammatory exudate for many years their normal repair is altered to an extent which may eventually result in neoplastic growth. The life history of carcinoma developing in osteomyelitic foci is one of slow progression. In view of the tendency of the tumor to remain localized, a good result may confidently be expected after amputation of the involved limb. Considering the slow growth of the lesion and the failure to metastasize, there may be some doubt as to whether it represents true epidermoid carcinoma. Yet the extensive invasion with replacement of soft tissue and bone must place the neoplasm in that category.

American Journal of Public Health, New York

28: 423-558 (April) 1938

- Certain Criteria in Qualifications and Preparation of Health Officers. H. E. Meleney, Nashville, Tenn.—p. 423.
- The Physician's Statement of Cause of Death. A. H. Sellers, Toronto, Canada.—p. 430.
- Organisms Involved in Pollution of Water from Long-Stored Feces. L. W. Parr, Washington, D. C.—p. 445.
- Preventive Aspects of Crippling Diseases. H. E. Hilleboe, St. Paul.—p. 451.
- The Public Health Nurse and Orthopedic Nursing Care. Dorothy J. Carter, Boston.—p. 458.
- Social Work and the Physically Handicapped Child in the Development of a New State Program. Dorothy Buckner, Augusta, Maine.—p. 464.
- Acquired Tuberculosis in Primate in Laboratories and Zoologic Collections. C. R. Schroeder, New York.—p. 469.
- Industrial Hygiene Applied to the Clothing Manufacturing Industry. W. H. Schulze, Baltimore.—p. 476.
- *Necropsy Evidences on Relation of Smoky Atmosphere to Pneumonia. S. R. Haythorn and H. B. Meller, Pittsburgh.—p. 479.
- Physique and Health. J. F. Williams, New York.—p. 487.

Problem of Causes of Stillbirth. Ethel C. Dunham, Elizabeth C. Tandy, E. F. Daily and Clara E. Hayes, Washington, D. C.—p. 491.

Extent and Seasonal Variations of Intermittency in Growth. C. E. Turner and A. Nordstrom, Cambridge, Mass.—p. 499.

Relation of Smoky Atmosphere to Pneumonia.—Pittsburgh presents an unusual opportunity for the study of the relation of smoke to pneumonia. Haythorn and Meller review the evidence accumulated and add to it the data acquired through the analysis of 3,000 persons dying from various diseases in Pittsburgh hospitals. The examinations were made for the purpose of determining the kinds and extent of the changes in the lungs and the amount of visible deposits of dust. The series represents a cross section of the general inhabitants of the city. The lungs removed at necropsy were graded microscopically for the amount of extraneous pigment and the resulting fibrosis. Grades 0, 1 and 2 appeared to have no particular occupational basis. Grade 3 was a mixed nonoccupational and occupational group. Grades 4 and 5 were largely, although not exclusively, occupational. The incidence of pneumonia, "all forms" and of lobar pneumonia was tabulated in relation to each grade of anthracosis. In spite of the high local death rate from pneumonia, no anatomic evidences of a relation between the incidence of pneumonia and the milder grades of anthracosis could be demonstrated in the nonoccupational groups. In grades 3, 4 and 5 there was a definitely higher percentage of pneumonia, but the average age for each of these grades coincided with the period of life at which the death rate from pneumonia in less smoky communities is likewise highest. Healing by organization of unresolved pneumonia was consistently higher in all of the more advanced grades of anthracosis and greatest in grade 5. The organizing foci appeared to be associated with heavy deposits of pigment, microscopic areas of fibrosis and isolated emphysematous pockets in fibrosed portions of the lungs. Nothing tangible was found to connect the deposits of pigment with the high incidence of pneumonia and high mortality rates, but the association of severe anthracosis and healing by organization formerly reported is verified.

Annals of Internal Medicine, Lancaster, Pa.

11: 1777-1924 (April) 1938

- *Grave Sequelae of Blood Transfusions: Clinical Study of Thirteen Cases Occurring in 3,500 Blood Transfusions. E. L. DeGowin, Iowa City.—p. 1777.
- Chronic Atrophic Arthritis. H. E. Thompson, B. L. Wyatt and R. A. Hicks, Tucson, Ariz.—p. 1792.
- Tumors of Pulmonary Apexes and Adjacent Regions Involving Brachial Plexus. H. C. Habein, J. M. Miller and J. C. Henthorne, Rochester, Minn.—p. 1806.
- Circulation Time as Diagnostic Aid in Hyperthyroidism. S. J. Goldberg, Philadelphia.—p. 1818.
- *Therapeutic Experiences with Cobra Venom. D. I. Macht, Baltimore.—p. 1824.
- Gastric Secretion in Cases of Pernicious Anemia. H. M. Rozendaal, Schenectady, N. Y., and R. N. Washburn, Rochester, Minn.—p. 1834.
- *Urticaria: A New Therapeutic Approach. H. A. Rusk and B. D. Kenamore, St. Louis.—p. 1838.
- Upper Lobe Pneumonia in the Adult. M. B. Rosenblatt and A. Bachman, New York.—p. 1845.
- Heliotherapy of Tuberculosis. E. Mayer, New York.—p. 1856.
- The Syndrome of Extrarenal Azotemia. H. Jeghers and H. J. Bakst, Boston.—p. 1861.

Grave Sequelae of Blood Transfusions.—DeGowin states that from November 1933 to July 1937 approximately 3,500 blood transfusions were performed in the hospitals of the University of Iowa. Citrated blood was used almost exclusively. It was administered through small needles by gravity. All serious complications resulting from transfusion were studied as thoroughly as circumstances permitted. Most of the transfusions were given with bloods of the same group, although bloods of group O were used occasionally when the homologous group was not available. Seven deaths directly attributable to blood transfusions occurred. Five persons died of renal insufficiency and two of pulmonary edema. Only one person in whom renal insufficiency developed recovered. The importance of using typing serums of high titer is emphasized by the donor in cases 2 and 4, who gave blood as of group O and later, with stronger serums, was found to belong to group A. The necessity for cross matching of bloods in addition to typing is illustrated by two cases in which the recipients were

found to belong to atypical blood groups which were not differentiated by strong typing serums and in which errors apparently occurred in the preliminary cross matching. A transfusion should be discontinued immediately on the occurrence of any unusual symptoms. That the present laboratory tests as routinely applied involving cross matching by the hanging drop, the Vincent open slide and the Landsteiner centrifuge methods are inadequate in certain instances to detect incompatibilities of bloods which after transfusion become manifest clinically is illustrated by one case and the experience of other authors. The various theories to account for the mechanism of renal insufficiency from blood transfusion are discussed. In view of the present ignorance of the mechanism of renal damage it would seem that the only safe procedure at present is to alkalize the urine prior to transfusion. The use of "universal donors" is fraught with danger unless the agglutinins of the donor have been previously titrated and found to be weak. Pulmonary edema from blood transfusion is not the result of the administration of incompatible blood. On theoretic grounds, it would seem to be due to overburdening of the right side of the heart. Patients with cardiac damage and those with nitrogen retention from any cause apparently tolerate transfusions poorly. In patients having diseases which predispose to retinal hemorrhage transfusion is sometimes followed by bleeding into the macular region, causing serious impairment of vision. Necropsies of patients receiving transfusions are occasionally highly instructive if the pathologist is familiar with the morbid anatomy of transfusion reactions. This is especially true in cases of renal insufficiency.

Therapeutic Experiences with Cobra Venom.—The conclusion that Macht draws from various experiments is that cobra venom, like opium and its principal alkaloid, morphine, relieves pain through its action on the higher centers of the brain. While morphine relieves pain promptly and the effect wears off within a few hours, cobra venom does not induce analgesia rapidly but once it is induced the analgesia lasts much longer than that of morphine. Once analgesia has been established, patients may usually be kept comfortable with two or three weekly intramuscular injections of 5 mouse units of cobra venom. The author has personally administered two such injections twice a week to patients with advanced and hopelessly malignant cancers for months in succession and he has been able to keep them comfortable without using any other drug. While cobra venom has been chiefly advocated in cases of hopelessly advanced malignant tumors and their metastases, during the past year or two the author has extended its use to the treatment of certain nonmalignant conditions (severe neuralgias, chronic arthritis and angina pectoris with subacute, long-lasting paroxysms of pain). The number of arthritic cases treated with this drug is still not large enough to warrant discussion, although considerable relief of pain has been obtained in some instances. Cobra venom has also relieved the pain and relaxed the rigidity of the muscles and produced a general amelioration of parkinsonian symptoms in seven cases. The action of the drug in such cases is probably a complex one: (1) The analgesic action of cobra venom certainly plays a part, (2) the anticonvulsant property of the drug may also exert an effect and (3) it is probable that certain peripheral effects of cobra venom described by Cicardo may be involved in the mechanism of its action.

Urticaria.—It seems logical to Rusk and Kenamore that potassium should be a valuable drug in the treatment of edematous lesions of the skin: first it lowers the cutaneous irritability directly and secondly its pharmacologic reaction is similar to and definitely allied with epinephrine. The results in six cases that they report are far from conclusive but definitely indicate the therapeutic response. These patients had been tried on the various allergic regimens and orthodox treatment without success. A sound physiologic and pharmacologic basis seems to exist for the treatment of the various allergic phenomena by further change in the already abnormally altered mineral balance. In cutaneous irritability and cutaneous inflammation the potassium metabolism is markedly altered and an increase in cutaneous potassium causes an appreciable decrease in localized irritability. Potassium is almost identically like

epinephrine in its pharmacologic action. Because of these known facts it seems logical that certain allergic problems could be approached from this therapeutic angle with benefit. A high protein, low sodium, acid-ash diet, with added potassium chloride, has produced promising clinical results in six cases of chronic urticaria.

Archives of Pathology, Chicago

25: 607-776 (May) 1938

- Postmortem Examination of Stillborn and of Newly Born Infants. Edith L. Potter Chicago.—p. 607.
Experimental Atherosclerosis: I. Effect of Prolonged Administration of Thyrotrophic Factor of Anterior Lobe of Pituitary on Experimental Atherosclerosis in Rabbits. M. Bruger and F. Fitz, New York.—p. 637.
*Comparative Bacteriologic Studies of Human Blood, Viscera and Teeth Obtained at Necropsies. C. G. Burn and L. W. Burket, New Haven, Conn.—p. 643.
*Effect of Carbon Dioxide on Clotting of Blood. J. Tannenbergh, Albany, N. Y.—p. 652.
Experimental Investigation of Lechuguilla Poisoning. F. P. Mathews, Alpine, Texas.—p. 661.
Lymphocytic Response of Guinea Pigs to Epinephrine Hydrochloride, Sodium Bicarbonate Solution and Culture of Bacillus Coli, with Particular Reference to Effect of Antineutrophilic Serum on Lymphocytic Curves. J. S. Lawrence and W. B. Chew, Rochester, N. Y.—p. 684.
Role of Vitamin B in Resistance: VIII. Effect of Diets Rich in Vitamin B on Natural Resistance of Animals to Experimental Infection. D. Perla, New York.—p. 694.

Postmortem Bacteriology.—Burn and Burket find that cultures of human cardiac blood, viscera and apical tissues of the teeth obtained at necropsies show no significant differences in the frequency of recovery of bacteria from these sites. The greatest difference occurred in the kinds of organisms obtained. *Streptococcus viridans* and *Streptococcus nonhaemolyticus* were predominant among the bacteria recovered from the tissues around the apexes of the teeth. Other kinds were obtained with greater frequency from the blood stream and viscera. *Staphylococci* were procured from both teeth and viscera, in about the same frequency. Only eleven (10 per cent) of the apexes isolated in seven of thirty-eight necropsies on persons with bacteremia had gingival tissue and crowns sufficiently well preserved to suggest that the organisms at the apexes were from the blood stream. *Bacillus coli* was found around the teeth only in the presence of bacteremia. *Streptococcus haemolyticus*, *Diplococcus pneumoniae* and three unidentified organisms were the other kinds recovered from both blood and teeth. Of the fifty-five necropsies on persons with negative blood cultures obtained clinically or after death, eight showed fifteen apexes containing *Streptococcus haemolyticus* or pneumococci. The infections of three of these apexes are known to have been due to invasion by bacteria from the oral cavity. Suggestive evidence that transient bacteremia might occur at times during the life of a subject is indicated in the postmortem isolation of pathogenic organisms from the viscera, although both the clinical and the postmortem blood cultures remained negative.

Effect of Carbon Dioxide on Clotting.—Tannenbergh studied the influence of carbon dioxide on the clotting of blood. Whole blood obtained from various veins and arteries was studied directly after its removal in an apparatus whereby saturation with carbon dioxide was rapidly secured without mechanical disturbance of the blood by the gas. Citrated and recalcified blood and plasma were studied systematically directly after removal and after various periods up to five days. Citrated blood, the gases of which were evacuated in vacuo and which was subsequently saturated with carbon dioxide or oxygen, was also studied. In all these samples, carbon dioxide produced a varying but definite delay of clotting without, however, preventing it. Accordingly, the spontaneous clotting of blood in the heart and large veins of rabbits put to death following periods of inhalation of carbon dioxide was delayed. Acceleration of clotting after short periods of inhalation of carbon dioxide is considered an indirect transient effect of carbon dioxide on the peripheral and central nervous system, producing an enlarged output of epinephrine. Carbon dioxide is considered one metabolic product which physiologically counteracts clotting and thrombosis, especially in the small veins of the liver and kidney. Carbon dioxide may also be largely responsible for

the fact that blood in the capillaries is found liquid after death. This fact had heretofore been ascribed to the influence of the capillary endothelium, for which theory reasonable evidence was never adduced.

Arkansas Medical Society Journal, Fort Smith

34: 259-282 (May) 1938

- The Irritable Heart and Its Accompaniments. T. J. Dry, Rochester, Minn.—p. 259.
Bacillary Dysentery in 1937, Flexner in Type. L. D. Massey and Hortense Loucks, Osceola.—p. 266.
Infections of the Hand. H. E. Mobley, Morrilton.—p. 269.
Intussusception: Case Report. J. J. Monfort, Batesville.—p. 271.

California and Western Medicine, San Francisco

48: 305-392 (May) 1938

- *Selective Collapse by Partial Thoracoplasty: Recent Advances in Surgical Treatment of Pulmonary Tuberculosis. E. Holman and P. Pierson, San Francisco.—p. 312.
Abdominal Hernias: Use of Autogenous Strips of Fascia Lata in Repair of More Difficult Abdominal Hernias. D. C. Collins, Los Angeles.—p. 317.
Tonsillectomy: Planned, Complete Operation. W. R. Hunt, Santa Barbara.—p. 322.
Drug Eruptions Due to Barbiturates. F. G. Novy Jr., Oakland.—p. 324.
Acute Gonorrheal Arthritis Complicating Pregnancy. J. R. Upton, San Francisco.—p. 326.
Thrombocytopenic Purpura Haemorrhagica: Blood Studies During Infections After Splenectomy for Thrombocytopenic Purpura Haemorrhagica (Infectious Origin). K. H. Abbott, Ontario.—p. 332.
Id.: Treatment with Massive Doses of Moccasin Snake Venom. C. P. Imerman and S. W. Imerman, Los Angeles.—p. 335.
Endocrine Therapy in Acne Vulgaris. H. J. Templeton and S. R. Truman, Oakland.—p. 337.
Rotating Anode X-Ray Tube. R. A. Powers, Palo Alto.—p. 339.
Reconstruction of the Enlarged Breast. H. O. Barnes, Los Angeles.—p. 341.
Simmonds' Disease (Hypophysial Cachexia): Clinical Report of Several Cases with Discussion of Diagnosis and Treatment. R. F. Escamilla and H. Lissner, San Francisco.—p. 343.
Monocytic Leukemia: Some Blood and Bone Marrow Studies. H. A. Wyckoff, San Francisco.—p. 348.

Selective Collapse by Partial Thoracoplasty.—Pulmonary tuberculosis is frequently characterized by a large apical abscess, which forms the most intractable focus of the disease. Such an abscess must be closed either by reexpansion of the good lung or by compression. Healing will not occur unless closure of the cavity is effected. For such an abscess Holman and Pierson believe that localized selective collapse is preferable to the usual complete paravertebral thoracoplasty. A limited thoracoplasty may be necessary because of bilateral involvement of the lungs or the necessity for conserving the good lung at the base. The abscess may be displaced rather than compressed by the old fashioned paravertebral procedure. Complete collapse of apical abscesses may be aided by complete resection of the upper three ribs from the transverse process in the back to the costal cartilage in the front, resection of the transverse processes over the site of the abscess and resection of the lower third of the scapula. Revision of inadequate thoracoplasties for incompletely collapsed cavities should not be a repetition of previously ineffectual procedures but should include resection of the transverse processes over the site of the abscess and, when necessary, resection of the anterior stumps of the ribs through an anterior incision. In the presence of bilateral apical abscesses, a unilateral upper thoracoplasty may be effective in relaxing the opposite apex, thus providing better conditions for healing of both abscesses by one operative procedure. Thoracoplasty as a therapeutic measure should not be condemned or abandoned until the offending cavity has been effectually and completely collapsed.

Connecticut State Medical Society Journal, Hartford

2: 207-256 (May) 1938

- Regional Enteritis: Report of Two Cases. B. B. Landry, Hartford.—p. 213.
A Short Talk on Medical Libraries. A. Malloch, New York.—p. 223.
Treatment of Late Syphilis. M. J. Strauss, New Haven.—p. 227.
*Treatment of Alcoholic Psychoses with Thiamin Chloride (Synthetic Crystalline Vitamin B). M. E. Brodsky, Bridgeport.—p. 228.
The Hernia Problem. D. H. M. Gillespie, New York.—p. 231.

Treatment of Alcoholic Psychoses with Thiamin Chloride.—Up until 1937, when vitamin B extract became available in large quantities, alcoholic psychoses were a serious and unmanageable problem. Since that time it has been possible

to treat such conditions with a great deal of success. Of thirty-six cases that Brodsky treated, thirty-five are apparently cured. It is too early as yet to state definitely whether the cure will be permanent. All the chronic alcoholic psychoses treated were based on a history of alcoholism over a considerable period with hallucinations, particularly of the auditory threatening type, fear and disorientation. The treatment was as follows: (1) the removal if possible of alcohol, (2) daily injections of massive doses of crystalline vitamin B in the gluteal muscle, the dosage being anywhere from 500 to 2,000 units daily and (3) the administration of some such sedative as bromide, chloral and, in some cases, phenobarbital. Prompt improvement was observed in all cases within a period of weeks or months* and an absolute cessation of all symptoms even though they had lasted for some time. There was no recurrence of a desire for alcohol. This peculiarity was noticed also in acute alcoholic psychoses. The acute psychoses were treated with spinal drainage and daily hypodermic injections of vitamin B into the gluteal muscles in small doses such as from 300 to 500 units, and these also showed an improvement and a lack of desire to return to the former habits. The author is at present conducting a series of experiments to determine whether the human brain contains vitamin B normally and whether it is destroyed by alcohol.

Delaware State Medical Journal, Wilmington

10: 51-68 (April) 1938

- Danger of Preoperative Delay in Suspected Brain Tumor Cases. F. H. Leavitt, Philadelphia.—p. 51.
Injection of Sterilized Oil into Joints for Diagnostic Purposes. P. N. Jepson, Philadelphia.—p. 59.

Georgia Medical Association Journal, Atlanta

27: 133-176 (April) 1938

- Acute Infectious Diseases of the Nervous System. R. B. Wilson, Atlanta.—p. 133.
Injection Treatment of Hernia. E. Callaway, LaGrange.—p. 139.
The Practical Applications of Human Blood Typing Tests. E. B. Saye, Macon.—p. 143.
Low Back Pain with Sciatic Radiation: Recent Advances in Treatment. M. Harbin, Cleveland.—p. 147.
Tumors of the Bladder: Benign and Malignant. E. G. Ballenger, O. F. Elder, H. P. McDonald and R. C. Coleman Jr., Atlanta.—p. 153.
Staphylococci Septicemia: Treatment with Bacteriophage. W. M. Gilbert, Rome.—p. 155.
The Family Doctor versus Federal Medicine Socialized. J. C. Orr, Buford.—p. 158.

Illinois Medical Journal, Chicago

73: 357-448 (May) 1938

- Interstitial Keratitis Treated with Zinc Ionization: Preliminary Report. S. M. Edison, Chicago.—p. 405.
Surgical Emphysema of the Head and Neck Following Tonsillectomy. S. Del Chicca, Chicago.—p. 414.
Technic of Lumbar Puncture. A. Gabriellian, Chicago.—p. 415.
*Phrenic Interruption in Treatment of Pulmonary Tuberculosis. B. Klein, Joliet.—p. 418.
Fever in Children. E. Prilla, Chicago.—p. 420.
Treatment of Pneumonias with Sulfanilamide. D. J. Louis, Chicago.—p. 422.
Agranulocytosis Following Use of Sulfanilamide: Report of Case. P. R. McGuire and J. P. McGuire, Chicago.—p. 425.
The Birthright of a Child. N. Genevieve Chipman, Savanna.—p. 427.
Present Day Problems in Mentally Deficient Children. J. C. Kraft, Chicago.—p. 428.
Use of Mandelic Acid in Treatment of Genito-Urinary Infections. J. W. Ferrin, Chicago.—p. 429.
Place of Vaginal Cesarean Section in Obstetrics, with Presentation of Thirty-Four Cases. C. Fournarakis, Chicago.—p. 433.
Proctitis. C. J. Drueck, Chicago.—p. 438.

Phrenic Interruption in Pulmonary Tuberculosis.—Klein lists the uses of phrenic operations. The object of phrenic interruption is to paralyze the hemidiaphragm. Besides functional rest, phrenic interruption also produces a varying degree of venous and lymphatic stasis, as well as anoxemia, which plays such an important part in promoting fibrosis and encapsulation of tuberculous lesions with diminution of septic absorption from the lung. Phrenic interruption can be brought about by radical phrenicotomy, or exeresis, by simple phrenicotomy and by crushing the nerve fibers. In a series of seventy-five cases in which phrenic interruption was done by the author, forty-five were classified as moderately advanced and thirty belonged to the far advanced group. All but five cases showed

some improvement of subjective symptoms within three months following phrenic interruption. Of the total number of patients fifty-four became definitely improved, as evidenced by closure of the cavity and negative sputum. Of the remaining twenty-one patients all were known to have thick walled cavities, and supplementary operations, such as thoracoplasty, pneumothorax and permanent phrenic interruption, were performed on fifteen patients. Of these six died from extension of the tuberculous process and not as a direct result of the operation. The increased use of temporary phrenic paralysis has considerably widened the scope of its usefulness in the treatment of pulmonary tuberculosis. Having the added advantage of permitting with impunity a subsequent change from a temporary to a permanent paralysis or to supplement it with pneumothorax, temporary phrenic paralysis should be seriously considered when contemplating the first step in collapse therapy.

Indiana State Medical Assn. Journal, Indianapolis

31: 219-274 (May) 1938

- Fetal and Neonatal Loss. C. O. McCormick, Indianapolis.—p. 219.
Incidence and Mortality of Cesarean Section. K. M. Beierlein, Fort Wayne.—p. 228.
Some Surgical Principles in Treatment of Infections of the Hand. S. L. Koch, Chicago.—p. 231.
Renal Function Tests in Medical Practice. A. C. Corcoran, Indianapolis.—p. 233.
Appraisal of Visual Defects of Children in Indiana. G. A. Peters, Indianapolis.—p. 237.

Iowa State Medical Society Journal, Des Moines

28: 169-216 (May) 1938

- Hemolytic Streptococcus Sore Throats of Milk-Borne Origin: Epidemiologic Observations. T. E. Eyres, Des Moines.—p. 169.
Milk-Borne Streptococcus Sore Throats: Clinical Observations. F. Sternagel, West Des Moines.—p. 173.
Some Aspects of Fever Therapy. W. D. Paul, Iowa City.—p. 176.
Modern Treatment of Urinary Infections. P. F. Olson, Dubuque.—p. 180.
Extreme Azotemia of Unknown Origin and Without Uremia: Case Report. A. E. Feller and J. A. Greene, Iowa City.—p. 184.
Practical Aspects of Diabetes Mellitus with an Evaluation of Protamine Zinc Insulin. M. J. Rotkow, Des Moines.—p. 187.
Orthopedic Diagnosis of Chronic Low Back Pain. L. M. Overton, Des Moines.—p. 191.

Johns Hopkins Hospital Bulletin, Baltimore

62: 235-474 (April) 1938

- John Shaw Billings as an Army Medical Officer: A Tribute on His Hundredth Birthday, April 12, 1938. E. E. Hume, Washington, D. C.—p. 237.
John Shaw Billings and the Johns Hopkins Medical School: Tribute on One Hundredth Anniversary of His Birth. A. M. Chesney, Baltimore.—p. 283.
Two Papers by John Shaw Billings on Medical Education. A. M. Chesney, Baltimore.—p. 297.
John Shaw Billings and the History of Medicine. S. V. Larkey, Baltimore.—p. 372.
John Shaw Billings and the New York Public Library. H. M. Lydenberg, New York.—p. 389.
*Regional Ileitis and Ulcerative Colitis. E. S. Stafford, Baltimore.—p. 399.
Action of Insulin on Glycogen Reserves. E. M. Bridge, Baltimore.—p. 408.
Low Grade Partial Obstruction of Small Intestine. L. Martin and H. E. Wright, Baltimore.—p. 422.
Studies on Immunizing Substances in Pneumococci: VI. Essential Immunizing Antigens of Types I and II Pneumococci. L. D. Felton and Gladys Kauffmann, Baltimore.—p. 430.
Congenital Universal Insensitivity to Pain: Clinical Report of Three Cases in Children with Discussion of Literature. F. R. Ford and L. Wilkins, Baltimore.—p. 448.

Regional Ileitis and Ulcerative Colitis.—Stafford compares the etiologic aspects of regional ileitis with those of three cases of ulcerative colitis with lymphogranuloma of the large intestine. The clinical history in each case is not unlike that of a case of regional ileitis, the chief differential point being the presence of a positive Frei test. Under the microscope, in the last of these three, the typical lymphogranulomatous lesion is present and easily differentiated from the nonspecific lesion of regional ileitis. The microscopic appearance of the lesions in the first two cases of lymphogranuloma is not strikingly different from that of regional ileitis. In no case of regional ileitis were any tubercle-like structures found. The presence of a small foreign body in the third case cited is no doubt secondary to ulceration of the mucosa. In lymphogranu-

loma intestinal lesions may occur anywhere in the large intestine. No case has been observed in the Johns Hopkins Hospital, however, in which ulceration due to lymphogranuloma has been found in the small intestine. In the present series of ten cases of regional ileitis the Frei test, when carried out, was negative. The intestinal lesions due to the virus of lymphogranuloma are confined to the large intestine, whereas in regional ileitis the lesions are located in the small intestine. Many cases have recently been reported in which lesions were found simultaneously in the small and large intestines. These should be reconsidered, in the light of the possibility of discovering lymphogranuloma. The clinical features in the two types of cases are similar. The many points of similarity in the clinical course and, to a lesser extent, in the pathologic picture between lymphogranuloma of the intestine and regional ileitis suggest that the lesions of the latter are also produced by a virus infection. Further work with material from regional ileitis must be done to settle this point. Tuberculosis and amebiasis have both been adequately disposed of as possible etiologic factors by earlier writers on this subject.

Journal of Experimental Medicine, New York

67: 659-826 (May) 1938

- Hydrogen Ion Concentration in Exudates of Pneumococcal Infection. W. H. Kelley, E. N. Scadron and B. M. Shinnars, Durham, N. C.—p. 659.
Effects of Acidity on Growth of Pneumococcus in Culture Mediums Containing Proteins. W. H. Kelley, Durham, N. C.—p. 667.
Blood Plasma Protein Regeneration as Influenced by Fasting, Infection and Diet Factors: Variable Reserve Stores of Plasma Protein Building Material in the Dog. S. C. Madden, W. E. George, G. S. Warach and G. H. Whipple, Rochester, N. Y.—p. 675.
Uterine Adenomas in the Rabbit: I. Clinical History, Pathology and Preliminary Transplantation Experiments. H. S. N. Greene and J. A. Saxton Jr., Princeton, N. J.—p. 691.
Cross Reactions of Immune Serums to Azoproteins: II. Antigens with Azocomponents Containing Two Determinant Groups. K. Landsteiner and J. van der Scheer, New York.—p. 709.
Statistical Studies of Nature of Infectious Unit of Vaccine Virus. R. F. Parker, Cleveland.—p. 725.
*Serologic Evidence for Occurrence of Infection with Human Influenza Virus in Swine. R. E. Shope, Princeton, N. J.—p. 739.
Excretion of Cyanol, Azofuchsins I and Water by Kidneys of Rabbits. W. E. Ehrlich, G. M. Bartol and R. E. Wolf, Philadelphia.—p. 749.
Acute Experimental Glomerular Nephritis in Rabbits: Correlation of Morphologic and Functional Changes. W. E. Ehrlich, R. E. Wolf and G. M. Bartol, Philadelphia.—p. 769.
Effect of Tissue Enzyme on Pneumococci. R. J. Dubos and C. M. MacLeod, New York.—p. 791.
Immunization of Experimental Animals with Soluble Antigen Extracted from Pneumococci. R. J. Dubos, New York.—p. 799.
Studies on Experimental Hypertension: VII. Production of Malignant Phase of Hypertension. H. Goldblatt, Cleveland.—p. 809.

Human Influenza Virus in Swine.—Shope studied the serums from two age groups of swine on two New Jersey institution farms for their capacity to neutralize the swine and human influenza viruses. The serums from none of the young swine, born since July 1937, neutralized either virus. However, the serums of all the old hogs studied on one farm and three fourths of those on the other farm neutralized human influenza virus, although failing to neutralize swine influenza virus. These older animals had all been born prior to November 1936 and had thus lived through a winter when human influenza was known to have been unusually prevalent. The presence of human influenza virus-neutralizing antibodies in the serums of the older animals was not an age phenomenon, because serums from swine of corresponding ages from other sources failed to neutralize human influenza virus. It is believed that the antibodies in the serums of the older animals resulted from actual infection with human influenza virus and that a widespread infection of human origin had occurred. The failure to recognize either outbreak is not surprising because, even under conditions of experimental infection of swine with large doses of human influenza virus alone, the resulting disease is so mild and ill defined as to be difficult of certain recognition. How the virus was transferred to swine is unknown, though presumably it was either by direct exposure to human cases or through the medium of garbage contaminated by virus. The antigenic compositions of the influenza viruses infecting the swine at Bordentown and Jamesburg were definitely and completely different from that of ordinary swine influenza virus.

Previous to the experiments just described there has been no concrete evidence that influenza virus could be transmitted from man to swine under natural conditions. The present experiments, by demonstrating that human influenza virus of the type prevalent during the winter of 1936-1937 was transmitted to swine under natural conditions, furnish evidence that a similar transmission from man to swine might readily have occurred in 1918.

Journal of Infectious Diseases, Chicago

62: 129-224 (March-April) 1938

- Attenuation and Toxin Production of Diphtheria Bacillus: VI. Ultra-filtration of Toxin Produced in Peptone-Dialysate Mediums. A. Wadsworth, Mary W. Wheeler and Laura Mendez, Albany, N. Y.—p. 129.
- Linkage of Phage-Induced Characters in Eberthella Typhi. Jeanette D. Taranik and Jane E. Snow, Stanford University, Calif.—p. 131.
- Variation in Hemolytic Streptococci. M. H. Dawson, G. L. Hobby and Miriam Olmstead, New York.—p. 138.
- Comparison of Bacterium Necrophorum from Ulcerative Colitis in Man with Strains Isolated from Animals. G. M. Dack, L. R. Dragstedt, R. Johnson and N. B. McCullough, Chicago.—p. 169.
- Studies of Anaerobic Streptococci from Pulmonary Abscesses. C. Weiss and Dora G. Mercado, San Francisco.—p. 181.
- Hemolytic Streptococci of Human Feces. F. R. Smith and J. M. Sherman, Ithaca, N. Y.—p. 186.
- Hemolytic Streptococci of Milk. J. M. Sherman and C. F. Niven, Ithaca, N. Y.—p. 190.
- Studies on Bacterial Nutrition: Possible Role of Inorganic Salts and of Alterations in Culture Medium in Providing Growth-Promoting Effects. S. A. Koser, R. D. Finkle, A. Dorfman and F. Saunders, Chicago.—p. 202.
- Id.: Comparative Study of Growth-Promoting Properties of Various Substances. S. A. Koser, R. D. Finkle, A. Dorfman, Mary V. Gordon and F. Saunders, Chicago.—p. 209.
- Attempts to Assay Enterotoxin Substance Produced by Staphylococci by Parenteral Injection of Monkeys and Kittens. Ellen Davison, G. M. Dack and W. E. Cary, Chicago.—p. 219.

Journal-Lancet, Minneapolis

58: 207-264 (May) 1938

- Brain Tumors in Children. A. W. Adson, Rochester, Minn.—p. 207.
- Cryptorchidism. R. L. Wilder, Minneapolis.—p. 216.
- Fundamentals of Nutrition. L. S. Palmer, St. Paul.—p. 219.
- *Acute Anterior Poliomyelitis. W. S. Sako, R. L. Wilder and A. V. Stoesser, Minneapolis.—p. 223.
- Field Clinics for Crippled Children in Minnesota. H. E. Hilleboe, St. Paul.—p. 231.
- Early Treatment of Chemical Burns of the Esophagus: One Case Report of Advanced Stricture with Unusual Complications. K. A. Phelps, Minneapolis.—p. 237.
- The Feeding of the Child. C. A. Stewart, Minneapolis.—p. 239.
- Interesting Pediatric Cases Seen in Rural Practice. G. T. Schimelpfenig and M. B. Hebeisen, Chaska, Minn.—p. 244.
- Prostatitis. R. G. Hassett, Mankato, Minn.—p. 245.
- College Mental Hygiene Methods: II. One Year's Experience with Scheme for Early Detection of Personality Disorders Among Students. E. O. Harper, Cleveland, and H. D. Palmer, Philadelphia.—p. 250.

Acute Anterior Poliomyelitis.—Sako and his associates review the sixty-eight cases of acute anterior poliomyelitis admitted to the University and Minneapolis General Hospitals from July 1, 1937, to Dec. 31, 1937. In all these cases the diagnosis of acute anterior poliomyelitis was made after careful clinical and thorough laboratory investigation. The sex distribution was equal in the series. No evidence has been found to show any correlation between the blood groups and the incidence of poliomyelitis or the severity of paralysis. Paralysis of the muscles of the trunk and abdomen was frequent. Careful muscular tests should therefore be done before the patient is discharged in order to prevent subsequent deformities. The leukocyte count showed no relation to the temperature, the average count being at the upper limit of normal. This suggests that the blood response and presumably the antibody response is slow or absent. The majority of the spinal fluid cell counts were between 50 and 100. The curve of the spinal fluid cell count gradually fell until the onset of paralysis, when it rose again and then gradually fell. The polymorphonuclear count gradually decreased as the disease progressed, and the mononuclears correspondingly gradually rose until about the fourteenth day, when they reached practically 100 per cent. Repeated spinal punctures have revealed that many patients with definite clinical meningeal involvement or even paralysis may have normal spinal cell counts which subsequently may or may not become elevated. The course of the disease cannot be predicted by the temperature, spinal fluid observations or

the erythrocyte count. Convalescent human serum administered in the preparalytic stage was not effective in preventing paralysis nor did it cause any improvement in the paralytic cases so treated. Results tend to indicate that normal adult serum is the treatment of choice at the present time. Sulfanilamide administered in large doses to seventeen patients was found to be of no help. The use of respirators should be given preference in intercostal or diaphragmatic paralysis in which this form of treatment is most effective. In bulbo-spinal cases with unilateral pharyngeal paralysis the patient may be saved if the paralysis does not progress. In pure bulbar cases, the respirator is not indicated and possibly is contraindicated.

Journal of Pharmacology & Exper. Therap., Baltimore

62: 363-484 (April) 1938

- Pharmacologic Action of Deuterium Oxide: VI. Its Influence on Insoluble Water Loss. H. G. Barbour and Lillie E. Rice, New Haven, Conn.—p. 363.
- Sobisminol: Toxicity, Tolerance and Irritation According to Different Channels of Administration. P. J. Hanzlik, A. J. Lehman and A. P. Richardson, San Francisco.—p. 372.
- Continued Voluntary Drinking of Sobisminol: General Effects. P. J. Hanzlik and A. J. Lehman, San Francisco.—p. 389.
- *Excretion of Bismuth After Intramuscular Injection of Sobisminol: Experimental and Clinical Results. P. J. Hanzlik, A. J. Lehman and A. P. Richardson, San Francisco.—p. 404.
- Intramuscular Injection of Sobisminol: Absorption and Distribution of Bismuth. P. J. Hanzlik, A. J. Lehman and A. P. Richardson, San Francisco.—p. 413.
- Effects of Prostagline and Atropine on Human Stomach. H. O. Veach, B. R. Lauer and A. G. James, Columbus, Ohio.—p. 422.
- Basis for Acetylcholine Action of Choline Derivatives. R. R. Renshaw, D. Green and M. Ziff, New York.—p. 430.
- Action of Acetyl-Beta-Methylcholine Chloride (Mecholy) in Neurogenic Disturbances of Urinary Bladder, with Note on Mechanism of Spinal Shock. P. M. Levin, Baltimore.—p. 449.
- Influence of Ouabain on Contraction of Striated Muscle. M. Cattell, New York.—p. 459.
- Relation of Acetanilid and Other Drugs to Analgesia in Monkeys. P. K. Smith, New Haven, Conn.—p. 467.

Excretion of Bismuth After Injection.—The urinary and fecal excretion of bismuth after intramuscular injection of sodium bismuthate soluble (sobisminol) in therapeutic doses in animals and patients was observed by Hanzlik and his collaborators to be similar to that of water-soluble products of bismuth in general. Daily fluctuations in urinary excretion of bismuth were smaller after small doses than after multiple doses of sodium bismuthate soluble; peak of excretion occurred generally on the second or third day after the last injection and the excretion was well sustained, lasting at least one month after from three to twelve doses of sodium bismuthate soluble. Daily fecal excretion of bismuth fluctuated considerably. It amounted to about one eighth or one tenth of the urinary excretion. Sometimes it outlasted the urinary excretion and tended to last longer than after other soluble bismuth products. From 60 to 70 per cent of injected sodium bismuthate soluble was left unaccounted for in the bodies of both animals and patients. This body bismuth is presumably excreted in minute traces over long periods—a desirable state for efficient anti-syphilitic treatment. Consistent with an accumulation of bismuth in the body was a comparatively long duration of bismuth excretion and late presence of bismuth in some bloods and cerebrospinal fluids. The solution was satisfactorily tolerated intramuscularly in both animals and man.

New England Journal of Medicine, Boston

218: 663-710 (April 21) 1938

- *Etiology of Lung Abscess: Clinical Analysis of 447 Cases Occurring at Boston City Hospital from 1926 to 1935, Inclusive. L. M. Freedman, Boston.—p. 663.
- Lung Abscess and Its Relation to Surgery of Upper Respiratory Tract. H. Morrison, Boston.—p. 669.
- The General Practitioner and Thoracic Surgery. W. E. Burnett, Philadelphia.—p. 670.
- Classification and Treatment of Arthritis. D. S. O'Connor, New Haven, Conn.—p. 677.

Etiology of Lung Abscess.—Freedman selected a total of 447 cases in which the diagnosis of abscess of the lung was made at one time and all proved cases of abscess of the lung for comparative study. Roentgenograms were examined and histories and necropsies were studied. The total of cases accepted for investigation was 276. These were then separated into those of postoperative origin and those with other causes;

196 cases were of medical origin, seventy-six occurred as a postoperative complication and four were a result of trauma. Although it has become the general belief that postoperative complications are predominating factors, this was not the fact in the present cases. A careful investigation in other large clinics should produce similar results. Tonsillectomy is a prominent cause in a large number of cases, largely because it is more frequently performed than any other operation. However, when compared to the total number of operations performed it represents a smaller percentage than is generally realized and compares favorably not only with the incidence following pneumonia but also with that following other postoperative conditions. Nearly all the cases of abscess of the lung after tonsillectomy occur in adult patients, indicating that these patients require more careful selection and preoperative care and better postoperative attention than heretofore recognized. A more careful examination before all operative procedures and more careful postoperative observation will considerably lessen the incidence of postoperative abscess of the lung. A large proportion of abscesses of the lungs are still due to acute and chronic pneumonic processes and in all probability outnumber those occurring as postoperative complications.

New Jersey Medical Society Journal, Trenton

35: 193-258 (April) 1938

- The Management of Ureteral Calculus. S. R. Woodruff, Jersey City.—p. 197.
Contract Practice. S. T. Snedecor, Hackensack.—p. 202.
*Ulcerative Enterocolitis in Tuberculosis. E. Granet and G. G. Ornstein, New York.—p. 206.
Subdiaphragmatic Abscess. W. W. Maver and C. Oderr, Jersey City.—p. 209.
Oropharyngeal Insufflation of Oxygen: Technic for Therapeutic Use. E. A. Rovenstine, New York.—p. 213.
The Courtard Technic of External Radiation. M. Friedman, Newark.—p. 216.
The Need of Coordinated Efforts in Combating Cancer. W. G. Herrman, Asbury Park.—p. 220.
Pneumonia Treatment. H. A. Reimann, Philadelphia.—p. 223.
Peripheral Arterial Disease: Fundamentals in Their Diagnosis and Treatment. S. S. Samuels, New York.—p. 224.
Discussion of Maternal Mortality: Maternal Welfare Article Number Twenty-Five. F. C. Holden, New York.—p. 225.

Ulcerative Enterocolitis in Tuberculosis.—Granet and Ornstein made 2,416 examinations on 2,088 patients with pulmonary tuberculosis for the presence of ulcerative enteritis, of which 800 presented definite evidence of enterocolitis. Of patients with positive x-ray evidence of ulcerative enteritis, only 29 per cent had subjective gastrointestinal symptoms. In patients with pulmonary tuberculosis with positive sputum, it is futile to wait for the development of gastrointestinal symptoms in order to establish the diagnosis of complicating ulcerative enterocolitis. A simple barium sulfate examination at seven hours is practical and accurate. A favorable result can be expected from early diagnosis and prompt treatment. Successful treatment of intestinal tuberculosis depends on inactivation of the source of infection in the lungs. Absorption of toxins from active lesions of the lung, by their noxious systemic effect, prevents healing of intestinal lesions. The treatment of the intestinal lesions is general and specific. The general measures include actinotherapy, a high caloric, low roughage diet, the administration of vitamins C and D, iron for secondary anemia, calcium salts and, when indicated, insulin to stimulate appetite. Specific local treatment is directed primarily toward fostering peristaltic rest in the involved segments of the intestine. A smooth, low residue, high caloric diet, to which is added tomato juice and cod liver oil, reduces peristaltic action to a minimum and provides an excess of vitamins C and D. Abdominal pain is controlled by heat or adequate sedatives. Constipation is helped by small amounts of liquid petrolatum or by gently administered warm sodium chloride enemas. Diarrhea is controlled by the frequent administration of 15 Gm. barium sulfate or kaolin and, if necessary, tincture of deodorized opium in effective doses. Surgical intervention has definite indications in the treatment of certain types of intestinal tuberculosis. Granulomatous lesions should be resected. Operative delay may be costly in acute tuberculous appendicitis. Operative delay in perforation of tuberculous ulcers with resulting peritonitis is fatal.

New York State Journal of Medicine, New York

38: 483-600 (April 1) 1938

- Dermatitis Due to Bismuth Compounds: Associated with Cutaneous Sensitivity to the Arsenobenzols: Report of Two Cases. J. W. Jordan and H. L. Walker, Buffalo.—p. 483.
Cure of Hydrocele by Injection. L. H. Baretz, Brooklyn.—p. 489.
Tuberculosis Case Finding Among Children: Importance of Certain Age Groups. W. J. Ryan, Pomona.—p. 494.
Anesthetic Practices: Organization in a Teaching Hospital. E. A. Rovenstine, New York.—p. 497.
Teaching Neurology to Undergraduate Medical Students. L. H. Ziegler, Albany.—p. 501.
Every Day Prevention in Mental Health. B. Liber, New York.—p. 505.

38: 601-676 (April 15) 1938

- Vesicovaginal Fistulas: Their Cause and Cure. N. F. Miller, Ann Arbor, Mich.—p. 601.
Mental Growth in Epileptic Children. I. N. Kugelmass and Louise E. Poull, New York.—p. 605.
Intracapsular Extraction of Cataract with Iridotomy: Report of 100 Successive Cases with Capsule Forceps. F. Bracken, New York.—p. 610.
Lymphogranuloma Venereum: Present Status. D. Bloom, New York.—p. 616.
Irradiation for Stimulating or Suppressing Menstrual Function. I. I. Kaplan, New York.—p. 626.
*Urogenital Tuberculosis in Infants and Children. M. F. Campbell, New York.—p. 631.
Case of Hemiballismus: Motion Picture Presentation and Necropsy Findings. H. S. Gregory, Binghamton.—p. 635.
Gynecomastia in Lung Tumor: Associated with Pulmonary Tuberculosis. A. Altschul, New York.—p. 637.
Prolapse of Rectum in the Insane. G. L. Fair, Oyster Bay.—p. 641.

Urogenital Tuberculosis in Children.—Campbell believes that by more frequent complete urologic examination in young patients with so-called chronic pyelitis the true incidence of surgical tuberculous renal infection will be found much higher than the present collected data indicate. Exposure to active pulmonary tuberculosis is probably a more important etiologic factor than infection by milk. The renal infection is always secondary to a tuberculous focus elsewhere. When urogenital and skeletal tuberculosis coexist, they may be assumed to be secondary to a common primary focus. The usual urinary symptoms of renal tuberculosis in children commonly lead to the diagnosis of chronic pyelitis and, because symptoms referable to the bladder are the chief complaint in more than three fourths of the cases, cystitis is usually incorporated in the diagnosis. Tuberculosis of the epididymis is practically always secondary to renal tuberculosis. Although genital tuberculosis is uncommon in the young, it must be considered in the differential diagnosis of scrotal swellings. It is unimportant whether the epididymal infection is primarily hematogenous or results from secondary extension from a tuberculous prostate or seminal vesicle, in turn secondarily infected by urine from renal tuberculosis. The disease involves the epididymis primarily; true tuberculous orchitis is almost always a secondary invasion from a caseous epididymis. Epididymectomy is the treatment, yet orchidectomy must be performed when the testicle is secondarily involved. Tuberculous scrotal fistulas must also be excised with the epididymis. Heliotherapy and tuberculin therapy may be of supportive value but should not be relied on to cure the epididymitis. If the prostate is also tuberculous, the vas deferens on the opposite side should be divided between ligatures to prevent tuberculous extension to that epididymis. The symptoms of prostatic and seminal vesical tuberculosis are predominantly those of acute or hyperacute cystitis and result from intense inflammation of the overlying mucosa of the vesical trigon and outlet and of the posterior urethra. Since prostatic and vesicular tuberculosis are associated with or are secondary to renal invasion above or epididymal invasion below, amputation of the involved kidney or epididymis or both is the initial surgical procedure.

Public Health Reports, Washington, D. C.

52: 587-644 (April 22) 1938

- Frequency of Surgical Procedures Among 9,000 Families, Based on Nationwide Periodic Canvasses, 1928-1931. S. D. Collins.—p. 587.

52: 645-700 (April 29) 1938

- Serums, Antitoxin and Drugs in Treatment of Meningococcal Meningitis. Sara E. Branham.—p. 645.
Studies on Trichinosis: V. Incidence of Trichinosis as Indicated by Postmortem Examinations of 1,000 Diaphragms. M. O. Nolan and J. Bozicevich.—p. 652.

Radiology, Syracuse, N. Y.

30: 407-536 (April) 1938

- The Bedside Manner in Radiology. B. H. Orndoff, Chicago.—p. 407.
Integration of Clinical and Roentgenologic Findings in Diagnosis of Carcinoma of Esophagus: Study of 100 Cases. J. T. Farrell Jr., Philadelphia.—p. 412.
Some Important Considerations in Roentgenographic Demonstration of Tissues, Normal and Pathologic, Having a Relatively Low Differential Absorption. J. R. Carty, New York.—p. 417.
Immediate and End Results of Radiation Therapy in Certain Benign Bone Tumors. H. P. Doub, F. W. Hartman and C. L. Mitchell, Detroit.—p. 420.
*Skin Metastasis in Postoperative Irradiated Breast Cancer. F. W. O'Brien, Boston.—p. 437.
Biologic Basis of Fractionated Method of Irradiation of Malignant Tumors. J. Borak, Vienna, Austria; translated by E. T. Leddy, Rochester, Minn.—p. 439.
Tissue Necrosis. A. G. Schnack, Honolulu, Hawaii.—p. 451.
Roentgen Studies of Twins and Triplets. L. G. Rigler, Minneapolis.—p. 461.
*Spontaneous Pneumothorax. D. E. Ehrlich and A. Schomer, New York.—p. 471.
Racial Variations in Incidence of Cancer. G. L. Cheate, London, England, and M. Cutler, Chicago.—p. 485.
Clinical Observations in Treatment of Cancer by Supervoltage X-Rays. S. G. Mudd, C. K. Emery and L. M. Levi, Pasadena, Calif.—p. 489.
Sharpness of Shadows in Radiography of Lungs. R. R. Newell, San Francisco.—p. 493.
Role of Perirenal Injections of Gas in Radiologic Study of Adrenal Glands. C. Gianturco and C. H. Drenckhahn, Urbana, Ill.—p. 500.

Cutaneous Metastasis in Breast Cancer.—According to O'Brien, in a period of fourteen years (1923 to 1936) 407 cases of pathologically proved cancers of the breast were operated on at the Boston City Hospital. Of these 255 were treated postoperatively by x-rays. Single or multiple cutaneous nodules appeared in fifty-four of these 255 cases. In twenty-two cases cutaneous metastases appeared on an average of 8.14 months after operative intervention, which was frankly incomplete. In thirty-two cases cutaneous metastases appeared on an average of 14.6 months following the classic radical resection. There were ten of these cases, however, in which palpable axillary and supraclavicular glands were present before operation and the radical operation should not have been done. Cutaneous metastases did not appear for an average of 18.5 months in the twenty-two cases in which palpable nodes were absent and radical operation was performed. These statistics indicate that the appearance time of cutaneous metastasis in this group of breast cancers treated postoperatively by x-rays was directly related to the extent of the growth at the time of operation. There was no evidence that the kind of tumor influenced the appearance time of cutaneous metastases. However, cutaneous metastasis appeared with relative promptness following incomplete or injudicious surgery. If postoperative irradiation is of any value in inhibiting cellular growth and the distribution of cancer emboli, preoperative irradiation ought to be of greater value, for with the breast and axilla intact, larger amounts of radiation may be administered to these areas without damage to the wall of the chest and axillary vessels.

Spontaneous Pneumothorax.—Ehrlich and Schomer advance a theory of idiopathic spontaneous pneumothorax which depends on the location of a visceral pleural defect during natural "wear and tear." It is based on the assumption that, no matter what the cause of pleural and lung laceration, the location is what determines whether or not pneumothorax takes place. The size of the laceration is not a determining factor. If the tear involves bronchi, bronchioles, respiratory bronchioles or even alveoli lining the wall of a respiratory bronchiole, the atmospheric pressure in the trachea and bronchi by fairly direct communication exerts sufficient force to drive air into the pleural cavity and cause a pneumothorax. On the other hand, a laceration may involve numerous intercommunicating alveoli and not produce a pneumothorax. The authors are of the opinion that in normal respiration the gliding of the visceral over the parietal pleura causes a continuous shedding and regeneration of the pleural mesothelium. A slight defect in the regeneration at some point, if located in a portion of a lung lobule or lobules involving one or more bronchioles, will, when accompanied by a respiratory effort of greater or lesser severity, cause a tear in the visceral pleura and a

pneumothorax will follow. Of course the lack of probability of such an accident in this location is what makes true "idiopathic" spontaneous pneumothorax of rare occurrence. Sudden sharp pain in one side of the chest accompanied by increasing dyspnea and possibly collapse suggests spontaneous pneumothorax; physical signs and x-ray examination corroborate it. Prognosis is much better in the open and closed types. The valvular type causes the most severe symptoms, and owing to the treatment necessary makes this type more prone to complications; e. g., serous or purulent effusion. Uncomplicated spontaneous pneumothorax without distressing symptoms requires only rest and symptomatic medication. If dyspnea becomes severe and the side of the pneumothorax is greatly distended with air, as is almost always the case in the valvular type, deflation should be resorted to.

Rhode Island Medical Journal, Providence

21: 73-86 (May) 1938

- Psychiatry and the Criminal Law. C. A. Walsh, Providence.—p. 73.
Development of the Human Heart. A. Barry, Cambridge, Mass.—p. 76.

South Carolina Medical Assn. Journal, Greenville

34: 115-146 (May) 1938

- Lymphocytic Choriomeningitis: Report of Proved Case with Recovery. F. E. Zemp, Columbia.—p. 115.
Fifty-Two Years a Devotee of Medicine. G. P. Neel, Greenwood.—p. 116.
Silicosis. H. F. Wilson, Columbia.—p. 117.
Some Ocular Manifestations of Syphilis. P. G. Jenkins, Charleston.—p. 121.

Southern Medical Journal, Birmingham, Ala.

31: 465-578 (May) 1938. Partial Index

- Observations on Pathology and Pathogenesis of Acute Poliomyelitis in Recent Epidemic in Arkansas. A. F. DeGroat, Little Rock, Ark.—p. 475.
*Undulant Fever (Brucellosis) Treated with Sulfanilamide: Report of Case with Recovery. E. C. Toone Jr. and A. M. Jenkins, Richmond, Va.—p. 478.
Electrocardiogram in Rheumatic Fever. L. C. McGee, Elkins, W. Va.—p. 480.
*Relationship of Porphyrinuria to Human Pellagra: Note. T. D. Spies, Y. Sasaki and Esther Cross, Cincinnati.—p. 483.
Clinical and Experimental Studies with Noninvasion of Appendical Stump. J. K. Donaldson and H. S. Thatcher, Little Rock, Ark.—p. 488.
Lumbosacral Anomalies as Cause of Low Backache. W. Clarkson and A. Barker, Petersburg, Va.—p. 515.
Displacement of Intervertebral Cartilage as Cause of Back Pain and Sciatica. E. F. Fincher and E. B. Walker, Atlanta, Ga.—p. 520.
Treatment of Pneumonias with Deuteroproteose. C. Brooks, New Orleans.—p. 534.
Malignant Melanomas, with Particular Reference to Subungual Type. C. E. Newell, Chattanooga, Tenn.—p. 541.
Differential Diagnosis and Treatment of Lesions Obstructing Lower Portion of Esophagus. P. P. Vinson, Richmond, Va.—p. 548.

Undulant Fever Treated with Sulfanilamide.—Toone and Jenkins report the cure of a case of undulant fever (*Brucella abortus*, suis strain) in a Negro male patient. The diagnosis was confirmed by blood culture, agglutination and the *Brucella abortus* opsonophagocytic index. A rapid fall in temperature to a normal level associated with symptomatic improvement and negative blood cultures followed promptly after the administration of 450 grains (29 Gm.) of sulfanilamide over a period of eleven days.

Relationship of Porphyrinuria to Human Pellagra.—Spies and his associates believe that an increased excretion of porphyrin in the urine of twenty pellagrins, irrespective of the presence of dermatitis, indicates that increased porphyrinuria is an integral part of the syndrome of pellagra. The increased porphyrinuria does not parallel the severity of the clinical manifestations of pellagra. In this study it reached a peak in the majority of cases early in the course of the disease and in four cases the porphyrin excretion returned to normal despite the fact that the patients ate only a basic diet. Coproporphyrin 1 and 3 have been isolated from the urine in two classic cases of pellagra. It appears that an inadequate amount of nicotinic acid may impair hepatic function, which is followed by an abnormal formation of coproporphyrin 3. It would seem that the following working hypothesis might be advanced tentatively: In the absence of nicotinic acid the function of the liver is

impaired and coproporphyrin 3 is formed. This coproporphyrin is an abnormal product of porphyrin metabolism and is a sensitizing agent. Clinical observations show that certain pellagrins with large amounts of porphyrin in the circulation are not affected by prolonged exposure to the sun and that when there is a sensitizing effect it varies greatly with the individual patient.

Tennessee State Medical Assn. Journal, Nashville

31: 125-164 (April) 1938

- Treatment of Malaria. W. C. Colbert, Memphis.—p. 125.
Surgery in Patients of Advanced Age. B. Brooks, Nashville.—p. 128.
Angina Pectoris and Coronary Occlusion: Diagnosis and Treatment. P. H. Levinson, Chattanooga.—p. 136.
Radium: Indispensable Means of Therapy in Its Field of Service to Humanity. J. L. Crook, Jackson.—p. 144.

Texas State Journal of Medicine, Fort Worth

33: 791-874 (April) 1938

- Endocrinology in Pediatrics. H. Hosen, Port Arthur.—p. 797.
Ethnic Factors in Anorectal Disease. C. Rosser, Dallas.—p. 805.
Fundamentals in Treatment of Cancer of the Breast. J. T. Moore, Houston.—p. 808.
Due Consideration of the Unborn. J. M. Horn, Brownwood.—p. 811.
Iris in Cataract and Glaucoma: The Management of the Iris in the Operation of Cataract Removal. J. O. McReynolds, Dallas.—p. 817.
Local Allergy of the Eye Due to Orris Root: Case Report. W. E. Muldoon and I. S. Kahn, San Antonio.—p. 822.
State Medicine: A Challenge to the Medical Profession. J. M. Travis, Jacksonville.—p. 824.
Water Conservation: A New Problem in Malarial Control. C. K. DeBusk, Jacksonville.—p. 826.
Esophageal Obstruction: Case Reports. S. Israel, Houston.—p. 828.

34: 1-64 (May) 1938

- Orthopedic Conditions in Children: Review of 313 Cases. W. G. Stuck, San Antonio.—p. 6.
Rational Treatment of Chronic Arthritis. P. M. Keating, San Antonio.—p. 13.
Minor Surgery. K. H. Aynesworth, Waco.—p. 18.
Brucellosis. F. T. McIntire, San Angelo.—p. 22.
Encephalitis Lethargica. B. L. Jenkins, Clarendon.—p. 27.
Functions of the County Medical Society. G. Turner, El Paso.—p. 32.
Communicable Diseases in the Preschool Child. H. Tucker, Nacogdoches.—p. 35.
*Chronic Otitis Media, Conservative Treatment. H. Donnell, Waxahachie.—p. 39.
Ocular Birth Injuries of the Newborn. H. M. Block, Dallas.—p. 43.

Treatment of Chronic Otitis Media.—Donnell ceased the use of watery irrigation in the treatment of acute or chronic infections of the ear. The so-called dry treatment avoids many of the objections to watery solutions. The objection is not alone the soggy condition of the external canal but also the fact that many of these infections are kept active by the irrigative solution in the middle ear. The dry treatment is carried out by the use of cotton wicks. The wicks are changed as often as one fourth of their length is wet. It may be necessary to change them every ten or fifteen minutes if the discharge is profuse. If it is felt that one must irrigate an acute or chronically infected ear, it is best to use 70 per cent alcohol. Most chronically infected ears will heal if kept clean. Pratt in 1930 suggested what may be called "continuous drainage" by the use of cotton wicks. His method is to roll cotton on an applicator and clean the ear and then cotton in the form of a wick is left in the canal a little distance from the tympanum and replaced as often as it is soiled. The cotton wick should be long enough to rest comfortably on the tympanum and to protrude far enough from the external canal to be removed easily. It should not be large enough to fill completely the canal, as that would tend to make a soggy condition of the membrane and canal, which would be inimical to healing and could possibly cause furunculosis. About six years ago the author began the use of vitamins in the treatment of all chronically infected ears. Halibut or cod liver oil, to the equivalent of three or more teaspoonfuls of standard cod liver oil, and from three to six brewers' yeast tablets a day with the addition of orange or lemon juice to the diet have been used. The results have been satisfactory. With the wicks, which by capillary attraction are a form of continuous drainage, and the vitamins, infected ears have healed and a secondary membrane has formed when all other conservative means of treatment have failed.

Virginia Medical Monthly, Richmond

65: 251-314 (May) 1938

- Acute Sinusitis in Children. G. S. Fitz-Hugh, Charlottesville.—p. 251.
Are We Too Sinus Conscious? M. Edmunds, Petersburg.—p. 255.
The Care of the Aged. B. P. Seward, Roanoke.—p. 261.
*The Value of Posture in Evacuation of Secretion from Tracheobronchial Tree. P. P. Vinson, Richmond.—p. 270.
Fever, Malaria and Short Wave in Treatment of Neurosyphilis. J. A. Shield, Richmond.—p. 271.
Implantation of Costal Cartilage for Correction of Nasal Deformities. E. G. Gill, Roanoke.—p. 279.
Analgesia and Anesthesia in Obstetrics. W. McMann, Danville.—p. 281.
Traumatic Laceration of Inferior Vena Cava, with Recovery: Case Report. W. P. Barnes, Richmond.—p. 285.
Agranulocytosis: Report of Case. W. H. Chapman Jr., Suffolk.—p. 287.
Various Manifestations of Late Toxemia Occurring in Successive Pregnancies. A. Weinberg, Baltimore.—p. 290.
Use of Sulfanilamide in Meningococcal Meningitis with an Unusually Rapid Recovery in One Apparently Hopeless Case. R. D. Bickel, Roanoke.—p. 293.
Breech Presentation. A. J. Russo, Richmond.—p. 295.

Posture and Drainage of Tracheobronchial Tree.—Vinson believes that the most satisfactory method of drainage by posture is to have the patient kneel on the edge of a chair or low table and place his hands on the floor. In this way the trachea is so inverted that secretion in the lungs descends by gravity. In many instances large quantities of sputum will be expelled by such change in position. The benefit following drainage by gravity is sufficiently uncertain to make it inadvisable for patients who have tuberculous lesions or who are seriously debilitated. Pulmonary abscess usually is associated with a stricture in the bronchus communicating with the area of infection in the lung and, until this stricture is dilated to permit the flow of pus, change in posture will not be beneficial. After the stricture has been dilated, change in posture to promote drainage is seldom required. In chronic bronchiectasis, drainage of the lungs by posture may be helpful in reducing the amount of fetor of the secretion and in limiting expectoration to convenient periods of the day. But when bleeding is occasioned by postural drainage it should not be employed. The time of drainage should always be before meals and before retiring at night. If postural drainage is attempted after meals, vomiting may occur. A few patients with bronchiectasis may find that the flow of secretion from the lung does not begin until after breakfast, in which case inhalation of steam for ten or fifteen minutes will promote drainage. Regular postural evacuation of the tracheobronchial tree will lessen absorption of secretion, reduce the odor of the sputum and limit the cough and expectoration to convenient periods of the day. This treatment will not cure bronchiectasis, but it enables a patient to work with others without odor to his breath and without constant cough, which arouses the suspicion of tuberculous disease.

West Virginia Medical Journal, Charleston

34: 193-240 (May) 1938

- *Chronic Nontuberculous Lung Infections. J. H. Skavlem, Cincinnati.—p. 193.
Pulmonary Tuberculosis. K. M. Jarrell, Beckley.—p. 203.
Pelvic Abscess. W. S. Gardner, Baltimore.—p. 210.
Importance of Hoarseness as an Early Symptom of Laryngeal Malignancy. F. D. Woodward, University, Va.—p. 211.
Roentgen Ray Treatment of Inflammatory Lesions. V. L. Peterson, Charleston.—p. 213.
Physiotherapy: Its Growth and Place in Practice. C. M. Bray, Morgantown.—p. 215.
Poisoning by Aniline Contained in Shoe Dye: Report of Case. J. L. Wade, Parkersburg.—p. 218.
Volvulus of Sigmoid Producing Complete Intestinal Obstruction Associated with a Seven and One-Half Months Pregnancy: Report of Case. W. Bronaugh and W. R. Yeager, Parkersburg.—p. 220.
Partial Atelectasis of Lung: Report of Two Cases. J. A. Bigger, G. D. Vermilya and P. P. Vinson, Richmond, Va.—p. 222.
Terata Katadidyma. J. T. Mallamo, Fairmont.—p. 224.

Chronic Nontuberculous Lung Infections.—Skavlem believes that it is a grave mistake to treat any patient for tuberculosis because of chronic cough, expectoration and blood spitting, in the absence of positive tuberculous sputum, unless the possibility of other causes has been carefully considered and disproved. With such differential studies in mind he discusses other chronic infections of the lungs. These include bronchiectasis, bronchial dilatation, functional disturbances, cough, congenital cystic disease, abscess, distention of the bronchus, gangrene, syphilis, mycotic infection and tularemia.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Dermatology and Syphilis, London 50: 167-220 (April) 1938

- Bullous Iodide Eruption in Association with Malignant Endocarditis and Nephritis. H. G. Adamson.—p. 167.
Ehlers-Danlos Syndrome: Case. M. Bolam.—p. 174.
Progressive Melanosis of the Skin. F. R. Bettley.—p. 181.

British Journal of Ophthalmology, London 22: 193-256 (April) 1938

- Value of Orthoptic Training. F. W. Law.—p. 193.
Use of Sodium and Mercury Vapor Lamps in Ophthalmoscopy. A. J. Ballantyne.—p. 204.
Histology of Bowman's Membrane in Cases of Glaucoma. G. Talbot.—p. 210.
Exfoliation of Lens Capsule in Glaucoma. A. Garrow.—p. 214.

British Medical Journal, London 1: 713-764 (April 2) 1938

- Alkaloid Ephedrine. J. H. Gaddum.—p. 713.
Amenorrhea: Its Etiology and Treatment. T. N. MacGregor.—p. 717.
Rate of Sedimentation of Red Blood Cells as a Clinical Test in General Practice. E. Scott.—p. 722.
*Ascorbic Acid in Bronchial Asthma: Report of Therapeutic Trial on Twenty-Five Cases. H. B. Hunt.—p. 726.
The Female Climacteric and the Menopause. H. R. Donald.—p. 727.

1: 765-828 (April 9) 1938

- Interaction of Pregnancy and Associated Disease. R. W. Johnstone.—p. 765.
Calcium and Phosphorus Deficiencies in a Poor Human Diet. W. E. Gaunt, J. T. Irving and W. Thomson.—p. 770.
Fracture of the Neck of the Femur. H. A. Brittain.—p. 773.
Malignant Tumor of Thymus Gland. R. G. P. Evans.—p. 775.
Spontaneous Hemopneumothorax. J. Maxwell.—p. 778.
Extra-Uterine Gestation: Live Child. F. Stabler.—p. 779.

Cevitamic Acid in Bronchial Asthma.—In view of certain evidence that cevitamic acid may play a part in allergic conditions, particularly asthma, Hunt dispensed cevitamic acid in tablets of 50 mg. to twenty-five asthmatic patients. Other allergic symptoms were present in seventeen cases and chronic bronchitis in nine. The patients were instructed to take two of these tablets daily. During this treatment no medicine or injections such as vaccines were given, apart from antispasmodics or medicine for a troublesome cough. No evidence could be found of any marked improvement in the amount of wheezing, the incidence of attacks or the general condition. None of the five patients (other than the twenty-five) who received intramuscular injections of 500 mg. or more of the acid experienced any relief in their symptoms after a period of from twenty to thirty minutes, and the amount of epinephrine subsequently required to relieve the spasm was in no way diminished. Thus it was impossible to confirm the statement of Hochwald (1936) that asthmatic symptoms could be relieved by large intravenous injections of cevitamic acid.

Edinburgh Medical Journal 45: 245-308 (April) 1938

- Suicide. D. K. Henderson.—p. 245.
XXIII. Modern Anesthesia and the General Practitioner of Tomorrow. J. Gillies.—p. 264.
Debatable Tumors in Human and Animal Pathology: IV. "Mixed Tumors" of Salivary Glands. W. F. Harvey, E. K. Dawson and J. R. M. Innes.—p. 275.
*Myocardial Infarction: Pathologic Study. R. M. M. Lyon.—p. 285.

Myocardial Infarction.—Lyon reviewed the necropsy records of 3,200 consecutive cases in the Royal Infirmary during the period from 1931 to 1935 and found evidence of a definite myocardial infarct in 110 instances. Certain cases showed recent infarcts, while others had the fibrous scars of previous large infarcts, sometimes causing aneurysm of the ventricular wall. The incidence of infarction in the postmortem room was found to be 3.44 per cent. The sex incidence was seventy men and forty women. The average age of the patients at death was 61.21 years. Twenty-nine of the subjects died of some other disease and their myocardial infarction did not appear to have contributed materially to their deaths. The infarctions in women occurred at a slightly later age period. Syphilitic aortitis was present in eight out of seventy men but in only one woman, and

in this case the coronary vessels were not involved by the syphilitic process. Only eight patients had had diabetes, but there was a female preponderance of five cases to three. No other disease, apart from arteriosclerosis, appeared to be related to the occurrence of infarction. The 110 patients showed a total of 122 infarcts, twelve patients having two separate infarcts. Only five of the 122 infarcts were of the right ventricle. Pericardial friction, when present, is one of the important clinical signs of an infarction. Seventy-three of the patients were carefully examined at the time of their infarction and daily afterward. If the thirteen dying within twenty-four hours are excluded there remain sixty patients in whom friction might possibly have been heard. In only nine cases (15 per cent), however, was friction detected. Friction should be looked on as an important diagnostic sign if present, but its absence should not negate the diagnosis of infarction. Approximately half of the patients died within one month of their acute attack.

Irish Journal of Medical Science, Dublin

No. 148: 145-192 (April) 1938

- Desirability of Compulsory Notification of Measles and Whooping Cough. C. J. McSweeney.—p. 145.
Some Aspects of Food Inspection. P. F. Dolan.—p. 151.
Diagnosis and Treatment of Hydatidiform Mole. J. F. Cunningham.—p. 161.

Journal of Mental Science, London

84: 1-254 (Jan.) 1938

- The Eighteenth Maudsley Lecture: Science and Psychiatry. F. Golla.—p. 4.
Huntington's Chorea: Study of Thirty-Four Families. L. Minski and E. Guttman.—p. 21.
Some Problems of Histologic Diagnosis and Interpretation of Circulatory Disturbances in the Brain. A. Meyer.—p. 97.
Schizophrenia-like Psychoses in Young Children. R. A. Q. Lay.—p. 105.
Control of Dysentery by Prophylactic Inoculation. K. C. L. Paddle.—p. 134.
Insulin Treatment of Schizophrenia: I: Recent Advances in Insulin Treatment. H. P. Strecker.—p. 146.
Id.: II. Hypoglycemic Treatment of Schizophrenia: Some Impressions. A. A. W. Petrie.—p. 156.
*Insulin Therapy: Review, with Special Reference to Mechanism of Cure. R. Freudenberg.—p. 165.
Somnifaine Narcosis: Results of Forty Treatments in Thirty-Eight Cases. J. Kearney and P. J. Courtney.—p. 177.
Some Developments, Legal and Administrative, in Mental Treatment. R. H. Curtis.—p. 183.
Responsibility in Mental Disorder, with Special Reference to Allogagnia. W. N. East.—p. 203.

Insulin Therapy in Schizophrenia.—Although the metabolic observations in schizophrenia are not absolutely specific, Freudenberg believes that the following hypotheses concerning its basis and the mechanism of cure can be regarded as established. In schizophrenia there is probably a primary disturbance in cerebral respiration, perhaps due to some lack of oxygenating substances. This disturbance leads to a collection of toxic products, probably originating from the metabolism of protein. Insulin therapy induces the oxybiotic processes necessary for detoxication and also an irritation of the cell membranes, which results in an increased exchange between the cells and their surroundings. Similar but more sudden changes take place in metrazol therapy. Improved cerebral oxidation and the alkalosis occurring during hypoglycemic coma may be two factors of great importance in the recoveries seen after insulin therapy.

J. Royal Inst. Public Health and Hygiene, London 1: 377-438 (April) 1938

- Mental Hygiene in Modern Life. H. Yellowlees.—p. 387.
*Use of Plaster Splints in Arthritis. C. E. Kindersley.—p. 400.
Some Problems in the Management of Antenatal Clinics. Letitia D. Fairfield.—p. 408.
The Staffing of Antenatal and Child Welfare Clinics from the Point of View of: The Obstetrician. F. J. Browne.—p. 412.
Id.: The Pediatrician. C. J. K. Hamilton.—p. 417.
Id.: The Medical Officer of Health. V. Borland.—p. 421.
Id.: The General Practitioner. Helen Lukis.—p. 430.

Plaster Splints in Arthritis.—Kindersley lists three main principles that underlie the treatment of arthritic joints: rest, maintenance of such a position of the joint as will allow the least strain on the surfaces of the joint and maintenance of an adequate range of movement. There is no more satisfactory way of procuring rest than by adequate splintage. A perfect splint

is the only method of maintaining the best possible function with the least strain. Adequate range of movement, with removable plaster of paris splints, can be achieved by a daily exercise of the joint.

Journal of Tropical Medicine and Hygiene, London

41: 109-124 (April 1) 1938

*Advantages in Use of Plasma Rather Than Serum for Certain Immunologic Procedures, with Special Reference to Its Use in Tests for Syphilis. K. L. Burdon.—p. 109.

New Species of Genus *Microsporium*, *Microsporium Stilliansi*, Benedek, 1937, N. Sp., with Special Consideration of Phenomenon of Dissociation in Fungi Imperfecti. T. Benedek.—p. 114.

Unsuccessful Attempts at Curing Schistosomiasis by Oral Tablets. F. G. Cawston.—p. 118.

Plasma for Immunologic Procedures.—According to Burdon, the two circumstances that favor the use of plasma for immunologic tests are that a specimen of plasma may be secured more easily and more rapidly than a specimen of serum (since waiting for the separation of serum from the clot is unnecessary and even centrifugation may be avoided) and that plasma has a demonstrably higher content of antibody than serum from the same individual. The specific reactivity of plasma is interfered with in the fresh unheated specimen, but heating at 56 C. for only ten minutes is sufficient to remove the disturbing factors and to bring out the full specific activity. After the heating, brief centrifugation is all that is necessary to make the specimen of plasma ready for testing. Tests for syphilis on plasma by the Kline microscopic technic or by the Kahn method are as simple to perform and as reliable as the usual tests on inactivated serum, and they may be carried out in much less time. There is a close agreement in the reaction of the serum and the plasma of the same individual in Kline and Kahn tests, but plasma shows a consistent tendency to give a stronger reaction than the corresponding serum. The sensitivity of the reactions of plasma is not likely to lead to false conclusions but, on the contrary, it may be distinctly advantageous in the diagnosis of early syphilis and in following the effect of therapeutic procedures. The increased reactivity of plasma over that of serum of the same individual is not due to the presence of the sodium citrate in 0.1 per cent concentration in the plasma.

Lancet, London

1: 763-818 (April 2) 1938

The Hygiene of a Quiet Mind. Horder.—p. 763.

Juvenile Rheumatism: The Therapeutic Aspect. W. Sheldon.—p. 767.

*Porphyrinuria Following Sulfanilamide: Sulfanilamide Dermatitis. C. Rimington, assisted by A. W. Hemmings.—p. 770.

Significance of Fits in Insulin Therapy of Schizophrenia. L. A. Finiefs.—p. 776.

*Enteric Fever Treated with Suprarenal Cortex Extract and Vitamin C Intravenously. Najib-Farah.—p. 777.

Porphyrinuria Following Sulfanilamide.—Rimington and Hemmings examined the twenty-four hour specimens of urine for their content of porphyrin from patients receiving sulfanilamide, and abnormally high values were recorded in nearly every case. Sulfanilamide administered to healthy white rats in doses averaging 0.307, 0.278 and 0.079 Gm. per rat daily for periods up to thirty days also gave increase in urinary and fecal porphyrin excretion in each instance; values as high as ten times the normal were recorded. The animals had polyuria during the first days after dosing was instituted and declined somewhat in weight. No other signs of toxicity were observed. The presence of a slight degree of photosensitivity was determined as the result of exposure to ultraviolet rays. The symptoms of acute porphyrinuria bear some resemblance to those reported as a result of sulfanilamide intoxication. The relative proportions of series I and III porphyrins may prove helpful in explaining individual idiosyncrasies toward the drug, especially as regards the manifestation of sulfanilamide rash or dermatitis. When administration of the drug to rats is discontinued a slow return of the urinary porphyrin figure toward the normal level occurs, but this may take several weeks. Animals killed at the height of sulfanilamide dosing present only a slight degree of histologic abnormality in the liver and kidneys, but the spleens are of a blackish brown, much engorged and show extensive deposits of a greenish brown granular pigment, much stainable iron and a certain amount of porphyrin (observed fluoroscopically). The histologic picture had not returned to normal within twenty-eight days after dosing of sulfanilamide was discontinued. The

available evidence would suggest that a certain degree of destruction of blood cells is caused by sulfanilamide in the doses employed. The disturbance in the metabolism of pigment is not to be explained by this fact alone. A more deep-seated effect on the hemopoietic system is suspected, analogous, possibly, in some ways to the toxic action of lead.

Adrenal Cortex Extract and Vitamin C in Enteric Fever.

—Experimental and pathologic observations prove that the endocrine system, particularly the adrenals, has a defensive role in infection. As soon as the diagnosis of enteric fever is established, Najib-Farah begins to give intravenous injections of adrenal cortex extract, in doses between 5 and 20 cc., according to the age and state of the patient, with from 500 to 1,000 mg. of vitamin C. The two products are mixed in the same syringe, since they seem to be more active when injected together. During the same day two more doses of 500 mg. of vitamin C are injected at intervals of four hours; no oral medication is given but an ice bag is applied to the abdomen and occasionally to the head until the temperature falls. Administration of adrenal cortex extract and vitamin C is continued for from five to twelve days and is followed by two intravenous injections daily of 500 mg. of vitamin C alone for at least seven days. In fifteen cases of confirmed enteric fever (seven typhoid, three paratyphoid A, five paratyphoid B) and three cases of acute *Bacillus coli* infection which were treated in this way, the results were with one exception immediately favorable, the exception being a moribund patient with typhoid to whom this treatment was given as a last resort. The injections produce no pain, shock or reaction. There is abundant urination and a gradual fall of temperature to normal between the third and seventh days. Symptoms disappear rapidly, except perhaps the cough, which may need an expectorant, and the patient is soon able to take nourishment. In one case vomiting persisted after the fall of temperature but was stopped by subcutaneous dextrose-saline solution and in two toxic cases dextrose-saline solution had to be given to maintain the sodium equilibrium and to avoid dehydration.

1: 819-874 (April 9) 1938

Function of Bronchial Tubes. M. Ellis.—p. 819.

Gout. L. C. Hill.—p. 826.

*"Alcoholic" Beriberi. N. L. Price.—p. 831.

Pulmonary Atresia and Hypertrophy of Bronchial Arteries. T. East and W. G. Barnard.—p. 834.

Diphtheria Outbreak Associated with Ice Cream. E. Bloch.—p. 837.

Abdominal Aortic Aneurysm Associated with General Patalysis of the Insane. E. L. Hutton and A. J. Galbraith.—p. 838.

"Alcoholic" Beriberi.—Price cites a case of cardiac failure with polyneuritis in an alcoholic addict. It is similar to those in the acute group (secondary beriberi with severe cardiac failure in alcoholic addicts) described by Weiss and Wilkins in 1936. The cases appear to bear a sufficiently close resemblance to "wet" beriberi of the orient to warrant the belief that they share with it a common pathogenesis. The term "alcoholic" beriberi seems an appropriate and convenient title for the condition. The patient recovered completely after treatment by rest, a high calory diet and large amounts of vitamin B. The clinical features of value in diagnosis include reversible cardiac enlargement, shortening of the electrocardiographic conduction periods and a positive Aalsmeer test due to the morbid sensitivity of the circulation to epinephrine. The multiple factors concerned in the evolution of alcoholic beriberi include defects in diet and assimilation acting in conjunction with increased tissue requirement of vitamin B₁ due to an increase in rate, or alteration in type, of metabolism.

1: 875-924 (April 16) 1938

Some Deficiencies of Nutrition and Their Relation to Disease: I. Origin and Detection of Nutritional Deficiencies. C. C. Ungley.—p. 875.

*Schick Reaction and Circulating Diphtheria Antitoxin in Man. H. J. Parish and Joyce Wright.—p. 882.

*Sulfanilamide in Treatment of Chancroid. H. M. Hanschell.—p. 886.

Effect of Anti-thyrotropic Serum on Action of Human Thyrotropic Hormone. C. L. Cope.—p. 888.

Schick Reaction and Circulating Diphtheria Antitoxin.—Parish and Wright confirm the observations of Jensen and others that there does not exist a fixed antitoxin titer (the "Schick level") above which persons are Schick negative and below which they are Schick positive. Nevertheless, there is a much higher level of circulating antitoxin in groups of Schick-

negative than in groups of Schick-positive persons. One hundred and fourteen persons undergoing a course of immunization, many of whom were expected to have "borderline" immunity, were Schick tested. Blood samples were taken immediately before the Schick test and revealed a wide zone of circulating antitoxin values corresponding to positive, negative and doubtful Schick reactions. Similar tests were made with "multiple Schick toxins," sixty-one persons being tested with fourfold and thirty-nine with tenfold reagents. Negative reactions to the fourfold reagents were obtained in persons with as little antitoxin as from 0.002 to 0.0005 unit and to tenfold reagents with as little as from 0.01 to 0.002 unit per cubic centimeter. Pseudoreactions with fourfold and especially with tenfold reagents tended to make readings difficult and to produce discomfort in protein-sensitive persons. The routine use of these preparations cannot therefore be recommended. The Schick test has been of proved value in many immunization campaigns, but a negative reaction may not indicate in all cases a state of immunity sufficient to withstand attack by virulent gravis or intermediate strains. To maintain a sufficiently high "level of immunity," the periodic injection of prophylactic into Schick-negative as well as positive reactors may be considered advisable.

Sulfanilamide for Chancroid.—Hanschell treated his last twenty cases of chancroid with sulfanilamide. Each patient received deep subcutaneous injections of 5 cc. of a solution of prontosil soluble, and one or two further injections of 10 cc. at intervals of three days in addition to prontosil album by mouth in divided doses, 3 Gm. in twenty-four hours. There has been rapid healing of the ulcer without leaving the old precipitous-edge scar and rapid subsidence of the bubo in from five to ten days.

Medical Journal of Australia, Sydney

1: 597-638 (April 2) 1938

- *Interpretation of MacLean's Urea Concentration Test in Assessing Renal Function in Pregnancy. Vera I. Krieger.—p. 597.
Pharyngitis of Gas Gangrene in Man. W. J. Penfold and J. C. Tolhurst.—p. 604.
Lupus Vulgaris and Significance of Certain Nonspecific Eruptions in Relationship to Tuberculosis. J. E. McGlashan.—p. 607.
Some Experiences of Prostatic Surgery in a Provincial City: Report of 109 Cases. G. R. Davidson.—p. 611.
Diagnosis of Tuberculous Diseases of the Globe. J. B. Hamilton.—p. 619.
Treatment of Clonic Facial Spasm by Nerve Anastomosis. G. Phillips.—p. 624.

Urea Concentration Test and Renal Function.—Krieger has established that, when the normal concentrating power of the kidney is found in association with a small secretion of urine after 15 Gm. of urea has been given, the total amount of urea excreted in the three hours of the test gives a more satisfactory measure of renal efficiency than the percentage concentration of urea in any of the single hourly specimens in the MacLean urea concentration test. The possible combinations of total urea excreted in three hours in relation to the volume of urine secreted are as follows: Normal total urea excreted in a normal, small and large volume of urine in three hours and a small total urea excreted in a normal, small and large volume of urine in three hours. An analysis was made of the 703 urea concentration tests from 437 pregnant patients. The standard of normality used for this classification was that at least 4 Gm. of urea must be secreted in from 150 to 300 cc. of urine during the three hours following ingestion of 15 Gm. of urea in 100 cc. of water. From a consideration of the clinical data presented it is evident that there is agreement between the clinical condition of the patient and the renal efficiency assessed by the total excretion of urea in the MacLean test. More than 50 per cent of the tests on patients in severe and prolonged toxemias exhibited renal inefficiency in the antepartum period. In the puerperium a greater percentage of patients with poor renal function were again found among the toxemic patients. The total number of tests in which the total excretion of urea in three hours aided in determining kidney function was seventy-nine previously termed normal and shown to represent inefficiency and forty-five in which the efficiency was "uncertain" and which have been definitely established as "inefficient." By modifying the interpretation of the MacLean urea concentration test so that efficiency is determined by the total excretion of urea, 17.6 per cent more tests were shown to indicate renal inefficiency

than when the concentrating power was used as the determining factor. Among the normal pregnant patients 69 per cent of tests fell in the normal groups and 20 per cent in the groups indicating renal inefficiency. In the severe toxemias (preeclampsia, nephritis and eclampsia) only one third to one fifth of the tests showed normal renal function and from one half to two thirds indicated renal damage. Among the less severe toxemias (albuminuria) the highest incidence of "doubtful" results occurred. The incidence of tests indicating normal function or renal damage is thus in agreement with the severity of the toxemia in this series of results obtained under entirely different experimental conditions from those described earlier. Renal damage is indicated (1) when a low percentage of urea is excreted in a small volume of urine resulting in a low total excretion of urea in three hours, (2) when a low percentage of urea is excreted in a large volume of urine but the total excretion of urea in three hours is low, (3) when a normal percentage of urea is excreted in a small volume of urine so that the total excretion of urea is low, and (4) when the percentage of urea for one of the three hours is normal or high, but excreted in a small volume of urine and the percentages of urea in the two remaining samples are low so that the total excretion of urea in three hours is low. When a small percentage of urea is excreted in a large volume of urine so that the total excretion of urea is normal or high, the interpretation is uncertain.

Tubercle, London

19: 289-336 (April) 1938

- Silicosis in the British Coalfields. W. E. Cooke.—p. 289.
*Erythrocyte Sedimentation Rate in Pulmonary Tuberculosis. A. Rest.—p. 307.
Further Studies on Methods of Desensitization of Tuberculous Guinea Pigs. J. D. Thayer.—p. 313.

Sedimentation Rate in Pulmonary Tuberculosis.—Rest studied 4,867 sedimentation tests on 944 patients with pulmonary tuberculosis from 1926 to 1935. He draws the following conclusions: 1. The erythrocyte sedimentation test is of no diagnostic value. 2. The sedimentation rate is of no value in diagnosing the extent of the pulmonary lesion. Although almost all the nontuberculous patients and those with lesions of minimal extent fell within the low sedimentation groups, many of the patients in the low groups suffered from far advanced disease. A low sedimentation rate in a patient with definite pulmonary tuberculosis generally indicates the presence of an inactive, non-progressive type of chronic fibroid tuberculosis. In a small number of patients a normal sedimentation rate does not definitely exclude activity; but definite and pronounced clinical activity and persistently low sedimentation rates are rare. Usually the sedimentation rate becomes markedly accelerated. 3. In the presence of clinically demonstrable tuberculosis, acceleration of the sedimentation rate definitely indicates, or at least strongly suggests, active and progressive disease. It indicates that the body has been severely damaged by the disease. There was a slowing of the rate in some far advanced rapidly progressive cases, probably because of anergy. Occasionally, high sedimentation rates occur in patients with little if any evidence of clinical activity. As a rule, however, this foreshadows the eventual onset of symptoms of activity and progression of the lesion. 4. Slowing of the sedimentation rate, or a return to a normal level, is a striking and, in the majority of patients, a usual accompaniment of clinical improvement and subsidence of symptoms and signs, especially those of toxemia. The sedimentation rate is an index of the condition of the patient at that time. It is of considerable value in prognosis. It was found that the number of deaths increased with the degree of acceleration of the sedimentation rates. 5. The test is of considerable significance in the treatment of patients in regard to rest and exercise. Patients with a persistently high sedimentation rate should be kept more strictly at rest than those with fairly normal rates. 6. The sedimentation rate is of no value in the differential diagnosis between pulmonary tuberculosis and other pulmonary diseases. With the help of the test one can differentiate between an inflammatory or a noninflammatory benign process, but the etiology of the lesion cannot be determined. Pulmonary abscess, gangrene and tumor show accelerated sedimentation rates without characteristic differences from those found in pulmonary tuberculosis.

Annales d'Anatomie Pathologique, Paris

15: 337-453 (April) 1938

- Chronic Epithelial Nephritis and Bence Jones Proteinuria. P. Vuilleumier.—p. 337.
- Morphologic Observations on Hyperergic Inflammation in Atrophic Muscular Tissue in Relation with the Participation of Nervous System in Allergic Reactions of Tissues. J.-M. Lasovsky and D.-N. Wyropajew.—p. 357.
- *Anatomopathologic Considerations on Scarlet Fever Associated with Ulceronecrotic Sore Throat: Special View of Lesions of Neurosympathetic System. V. Angheliesco, S. Fasie and T. Poenaru-Companeitz.—p. 371.
- Cyst of Internal Meniscus of Knee. L. Marchand and H. L. Guibert.—p. 389.
- Lymphatics of Pyloric Portion of Stomach. C. Rohlich.—p. 401.

Scarlet Fever with Ulceronecrotic Sore Throat.—Angheliesco and his associates made anatomopathologic studies in seven cases of scarlet fever associated with ulceronecrotic sore throat. The tissues were fixed with 10 per cent solution of formaldehyde, with Bouin's fluid, with alcohol; the paraffin sections were stained with hematoxylin-eosin according to the methods of Nissl, Giemsa, Gram and others. In summarizing their observations the authors say that in the sphere of the nervous system the most important lesions are those in the cervical sympathetic chain. The other parts of the nervous system present lesions characteristic of severe toxemia. The lesions of the lymphoid system are general and important. In the posterior part of the throat they have the aspects of hyperergic inflammatory lesions. The "reaction" of the histiocytic apparatus, such as it is, shows microscopic changes with the aspects of a deep lesion with sideration of these elements. Of the endocrine glands the adrenals are the most severely involved. Recent experimental studies demonstrated the repercussions which the toxic lesions of the sympathetic nervous system have on the morphology and functions of the lymphoid organs and of the endocrine glands. Attempts have been made to ascribe an important role in the physiopathology of scarlet fever to the sympathetic nervous system, particularly the nervous centers of the sympathetic ganglions. The authors think that their anatomopathologic observations can be taken as an argument in favor of this interpretation. They believe that in cases of scarlet fever with ulceronecrotic sore throat the clinical and anatomopathologic type is produced by latent lesions of the lymphoid organs and particularly by the nervous elements of the cervical chain. These lesions are due to repeated infections during earlier periods. The authors emphasize that their patients were of the adenoid type, the previous history disclosing infections of the cervical lymphoid organs. The lesions which they detected in the sympathetic nervous system become the anatomic basis to which certain authors apply the term constitutional fragility of the neurosympathetic apparatus. On this anatomic basis the clinical type characteristic of scarlet fever with ulceronecrotic angina develops. Although it may be difficult to affirm at the present time the importance of the effects of the sympathetic centers in the defense against intoxications, the question may be raised whether the alterations of the sympathetic nervous system, such as those observed by the authors, are not at least partly responsible for the insufficiency of the defensive processes of the organism.

Archives des Maladies du Cœur, Paris

31: 381-476 (April) 1938

- *Terminal Infectious Endocarditis in Course of Old Rheumatic Endocarditis. A. Dumas.—p. 381.
- Value of Leads 4 and 5 for Diagnosis of Myocardial Infarct of Type T. E. Donzelot and M. Pelaez.—p. 393.
- Dissociation of First Heart Sound: First Sound with Auricular Precession and Retarded Presystolic Gallop. C. Lian and J.-J. Welti.—p. 408.
- Electrocardiographic Study of Carotid Sinus Reflex. J. Lenègre.—p. 421.

Terminal Endocarditis in Old Rheumatic Endocarditis.—Dumas directs attention to the relations between infectious endocarditis and rheumatic endocarditis, pointing out that some authors are of the opinion that the two disorders have a common etiology. The disease of Bouillaud and the disease of Osler are regarded merely as two different forms from the same infectious state directed by *Streptococcus viridans*. It acts by its toxins in the first case and it is detected by hemoculture in the second. A number of authors, especially

Americans, have demonstrated *Streptococcus viridans* in repeated blood cultures in numerous cases of Bouillaud's disease. After pointing out that Weil and his collaborators reported three cases which favor this theory, Dumas presents four carefully studied cases, in three of which a necropsy was performed. One of these observations does not favor the theory of the common origin, because the port of entry of the infection that was superimposed on an old stabilized mitral endocarditis was brought into evidence with incontestable certainty, in that the infectious symptoms appeared following an abortion. In two other cases, however (the second and third), the transition was unnoticeable between the rheumatic crises of Bouillaud's type with negative hemocultures and favorable modification by sodium salicylate, and the last crises, which developed many years after, gave positive streptococcus hemocultures and had a fatal outcome. The necropsy revealed in these two cases exuberant vegetations of a recent type grafted on old, articular lesions, which certainly were contemporary with the first attacks. The fourth case described by the author raises the problem of an intestinal port of entry of the infectious agent, but here, as in the preceding observations, the transition between the evidently rheumatic crises of the early period and the crises of the infectious type during the terminal period does not permit final conclusions. The author points out that rheumatic endocarditis is a frequent disorder, particularly in its chronic form. It often becomes established after the multiple rheumatic attacks of childhood and adolescence, but in a number of cases its further development ceases after a certain time. There are many persons with mitral or aortic defects who lead an almost normal life and often reach an advanced age. Moreover, it is generally accepted that the lesions of rheumatic endocarditis are chiefly articular, retractable, old and nearly always cicatricial, whereas in the small number of subjects who much later (after ten, fifteen or twenty years) have an infectious endocarditis the lesions are quite different, without connection with the earlier ones and consisting of ulcerative processes or of vegetations that are superimposed on the old cicatrized ones. The author thinks that in view of this difference in the lesions and the difference in the clinical course, first of the rheumatism and later of the infectious state, it is impossible to speak of a common cause. In the reported cases the rheumatism of Bouillaud's type took on the aspects of Osler's disease after many years (twenty years average). This is the reason why, without deciding beforehand whether or not there is a common cause, the author designated this special type of endocarditis as "terminal infectious endocarditis."

Revue Médicale de la Suisse Romande, Lausanne

58: 257-320 (April 25) 1938. Partial Index

- Exceptional Case of Inclusion of Biliary Vesicle in Liver with Intrahepatic Perforated Diverticulum. A. Charbonnier and E. Schauenberg.—p. 284.
- *Typhoid in Those Vaccinated Against Typhic Infections. M. Monnier.—p. 301.

Typhoid After Vaccination.—On the basis of more than twelve years' experience with vaccination against typhoid and paratyphoid in a medical mission in Syria, Monnier states that anybody who is vaccinated with a vaccine containing eberthian strains has a good chance of remaining free from typhic infections, provided this vaccination is renewed every year. Unfortunately, there are rare cases of failure which might bring a valuable treatment into disrepute. The author observed typhoid in vaccinated persons but never a fatal case. The cause for the failure may be that the vaccination was repeated only at intervals of two, three or even five years; or, if repeated annually, the person may have been debilitated by amebic dysentery, malaria or other infection or he may have consumed heavily polluted water. The author gives a detailed clinical history of a patient who contracted typhoid after vaccination and says that he observed three other mild cases in patients who had become infected in regions where there were epidemics. On the basis of these observations, the author says that the onset of typhic infections in the vaccinated is identical with that in the nonvaccinated but that there is nevertheless a reduction in gravity and in duration. The recovery is rapid and the change in the general condition is slight.

Giornale di Clinica Medica, Parma

19: 469-558 (April 30) 1938

- Metapleurisy in Right Side of Abdomen. D. Campanacci.—p. 469.
Diabetes Mellitus and Hypogenitalism. E. Rastelli and V. Rossi.—p. 477.
*Effects of Intravenous Administration of Small Dose of Epinephrine on Gastric Secretion Which Was Tested by Histamine and Also on Some Substances of Blood. C. Negri and G. Terzi.—p. 493.
Treatment of Uricemic Arthritis by Means of Piperazine Phenylquinolin-carbonate. D. Zappia.—p. 524.
Spasm of Esophagus from Cervical Hypertrophic Spondylitis Deformans. G. Pescatori.—p. 530.

Intravenous Injection of Epinephrine.—Negri and Terzi studied the effects of an intravenous injection of 0.02 mg. of epinephrine on the gastric secretion and on some substances in the blood of twenty-five adults. The study was carried out by determinations of the chemistry of the gastric juice and of the sugar and the substances in the blood which have diastasic and antitryptic properties. The tests were made in the course of the histamine test alone and combined with epinephrine. The authors conclude that the secretion of free hydrochloric acid during stimulation by histamine is modified by an intravenous injection of a small dose of epinephrine in persons who have a normal or increased secretion of the acid. In the majority of cases of this type the secretion of hydrochloric acid which is induced by histamine stimulation is inhibited by epinephrine and in a few cases it is increased. The secretion of free hydrochloric acid is not modified by epinephrine in persons who have achlorhydria or hypochlorhydria. The secretion of combined hydrochloric acid, the organic acids of fermentation and the peptic ferments of the gastric juice, as well as the amount of substances which cause diastasis and antitryptic properties to the blood, do not change in the course of the histamine test when used alone or in combination with epinephrine. There is a slight lowering of glycemia in the course of the histamine test, whereas there is a moderate transient hyperglycemia early in the course of the combined histamine and epinephrine test. The authors believe that the results of the studies show a relation between contraction of the spleen and the secretion of hydrochloric acid by the stomach. A normal output of splenic blood regulates the secretion of hydrochloric acid, whereas a diminished output results in the production of hypochlorhydria or achlorhydria. The authors' statement seems to be supported by the fact that the gastric chemism is disturbed in all cases of splenomegaly from defective contraction of the structure and that this form of splenomegaly plays an important part in the pathogenesis of gastric and gastroduodenal diseases with disorders of the gastric secretion.

Policlinico, Rome

45: 841-892 (May 2) 1938. Practical Section

- *Ucko's Reaction in Comparison to Induced Curve of Amino Acids in Blood in Pulmonary Tuberculosis. A. Rubino.—p. 841.
Treatment of Chronic and Acute Gonorrhea and Its Complications in Men by Para-Aminophenylsulfamide. V. Tommasi.—p. 847.
Dextrose in Cerebrospinal Fluid During Shock by Insulin Treatment in Schizophrenia. M. Fischer.—p. 851.
Torsion of Gallbladder. E. Giupponi.—p. 852.

Ucko's Reaction in Pulmonary Tuberculosis.—Rubino says that opinions in the literature on the value of Ucko's test for the functioning of the liver are conflicting. He followed the behavior of the reaction in 200 patients who were suffering from pulmonary tuberculosis. He found that the test gives strongly positive results in 40 per cent of the cases, slightly positive results in 30 per cent and negative results in 30 per cent. Strongly positive reactions correspond to grave forms of tuberculosis as well as those of long duration and when the patients are in poor nutritional condition. Slightly positive and negative results correspond respectively to chronic and benign forms and to tuberculosis recently developed or during recovery of the patients who are in satisfactory nutritional condition. The sedimentation speed parallels the results of Ucko's test. The author made a comparison of the results of Ucko's test with those of the tolerance test of aminoacetic acid, which are ascertained by the curves of amino acids in the blood before and fifteen, thirty and sixty minutes after the intravenous injection of 1.2 Gm. of aminoacetic acid.

The results of the tests parallel each other only in 50 per cent of the cases. The author concludes that Ucko's test is of value in the diagnosis of pulmonary tuberculosis and in estimating its intensity but that it has no value for the functioning of the liver.

Bol. de la Soc. Cubana de Pediatria, Havana

10: 147-194 (April) 1938

- Asthenic Habitus: Clinical Importance in Future of Children. B. Soria.—p. 155.
Abnormalities of Urinary Tract: Importance in Presence of Chronic Pyelitis. G. Cardelle.—p. 159.
*Magnesium Sulfate in Whooping Cough. E. Soto Pradera.—p. 173.
Puericulture. Esperanza Costa.—p. 183.

Magnesium Sulfate in Whooping Cough.—Soto Pradera calls attention to the value of magnesium sulfate as a symptomatic treatment of whooping cough. He gave daily intramuscular injections of a 10 per cent solution of magnesium sulfate to forty patients (thirty-eight infants and children and two adults). The dose varied from 0.25 to 1.1 cc. per kilogram of body weight until from fifteen to twenty injections had been given, according to the stage of the disease. The patients' urine was normal before, during and after the treatment. The crisis of the blood did not change. There was a decrease in coughing and vomiting early in the course of the treatment in thirty cases, with consequent clinical control of the disease after about fifteen injections. The treatment failed in ten cases. According to the author the treatment has an antispasmodic and sedative effect, by which the evolution and duration of whooping cough are favorably modified. The results were better than those he obtained in a group of 107 cases which were managed by the administration of common symptomatic treatments (antipyrine, belladonna, sodium bicarbonate and ether by rectum). Chronic nephritis contraindicates the treatment. Satisfactory results have been previously reported in Argentina. The author advises the preparation of a 50 per cent solution of magnesium sulfate instead of the 10 per cent solution which he used and to give the injections in doses of 0.2 cc. per kilogram of body weight. The dose is well tolerated and the volume of the injection is smaller than that used in more dilute solutions and causes neither pain nor local inflammatory reaction.

Archiv für Gynäkologie, Berlin

165: 317-712 (March 25) 1938. Partial Index

- Clinical Aspects of Vaginal Cesarean Section. E. Puppel.—p. 317.
Influence of Hormone of Male Gonads on Infantile Ovaries. H. Groher.—p. 347.
*Puerperal Sepsis Caused by Gas Bacillus. E. Tscherner.—p. 374.
Pathologic and Clinical Aspects of Dysgerminoma Ovarii. V. Föderl.—p. 392.
Menarche and Its Relations to Pigmentation. L. Ley.—p. 489.
Malnutrition and Impairment of Germ Cells. A. Bayer.—p. 591.

Puerperal Sepsis Caused by Gas Bacillus.—Tscherner asserts that the puerperal sepsis caused by the gas bacillus takes a special position among the various forms of puerperal sepsis. That this form has been given little attention in the gynecologic literature he ascribes to the comparative rarity and to the fact that it is often not correctly identified; this applies especially to patients who survive the acute stage and later succumb to the renal changes. The author surveys the cases of puerperal gas bacillus sepsis that were observed at the women's clinic in Graz in the course of the last five years. He differentiates three groups and describes and discusses cases of each group. The first group includes women who die within a short time as the result of acute symptoms. The author ascribes this rapid course, on the one hand, to a severe intoxication of the organism by the protein products resulting from the breakdown of tissues, by the gas bacillus, on the other hand, to the impairment of the blood and the resulting reduction in oxygenation. The second group includes those women who survive the acute symptoms but in whom, after a temporary improvement, signs of severe uremia develop, to which they finally succumb. The cause of the severe functional disturbance of the kidney, which may lead to complete anuria, is generally an interstitial nephritis, and in addition to this there often exists a toxic impairment of the epithelium of the uriniferous tubules and an obliteration of many tubules with masses of methemoglobin. In spite of slow regeneration of the tubular epithelium and in spite of an increase in the

quantity of urine, the uremic manifestations advance rapidly, probably because of the presence in the blood stream of large quantities of protein waste products derived from the breakdown of tissues and blood corpuscles, the impaired kidney being no longer able to eliminate them. In addition to these renal changes, the author observed a case with spotty necroses in the kidney which were the result of vascular impairments that occur in hyperergic conditions. The author explains the possible development of such a hyperergic state in puerperal women. The third group of women includes those who recover from the puerperal gas bacillus sepsis following treatment with gas edema. He describes three cases of this type but emphasizes that the administration of gas bacillus serum promises success only if it is given early and in large doses. The reported case histories indicate that the polyvalent antitoxic gas edema serum may be given intravenously in quantities of 40 or 50 cc., that intramuscular injections of the serum may be given simultaneously or that streptococcus and anaerobic serum may be given in combination with it. In view of the fact that the early recognition of the gas bacillus sepsis is of great importance for the treatment, the author stresses that whenever after a birth or abortion an icterus develops or the urine is scanty and reddish, gas bacillus sepsis should be thought of and a bacteriologic examination should be made on specimens of blood, urine and placental tissue.

Archiv für klinische Chirurgie, Berlin

191: 547-806 (April 8) 1938. Partial Index

- Treatment of Fractures of the Vertebrae. G. Magnus.—p. 547.
Malleolar Pseudarthrosis. P. Rostock.—p. 557.
Penetration of Thorax with Sharp Instrument with Cardiac Pulsation Transmitted to Foreign Body. E. Wetzel.—p. 594.
Surgery of the Perforated Gastric Duodenal Ulcer. L. Nicolas.—p. 602.
*Observations on Patients with Urinary Calculi Treated in the Jena Surgical Clinic During Last Ten Years. H.-A. Dege.—p. 632.
*Exophthalmic Goiter and Thyrotoxicoses. B. Breitner.—p. 754.

Urinary Calculi.—Dege observed the patients with urinary calculi treated in the Jena Surgical Clinic during the last ten years and states that improvement in roentgenologic technic due to introduction of the various contrast mediums and excretory urography within recent years makes it possible to demonstrate the presence of most stones, even those which cast a faint shadow. He had noted certain similarities between precipitation of urinary calculi and immunologic precipitation reactions. What is of importance is that the disturbance of the colloidal state necessary to bring about the original precipitation of a calculus in the urine need be of but short duration. This disturbance may no longer be demonstrable at the time of the passage of the stone. The primary disturbance plays no part in the growth of the stone. The author therefore draws a sharp line between the precipitation of a calculus and its growth. Precipitation of a calculus is the result of an important though transitory alteration in the general reactivity of the organism. It is not known just how this alteration effects the urine of the renal pelvis. It is possible that the influences originate in the circulation, perhaps as a disturbance in the peripheral blood vessels. The demonstrable relationships to the immunologic status of the body and to the vitamin economy suggest that precipitation of calculi is an expression of a disturbance in a profound and primitive body function. The cause of this disturbance is obscure in most cases or is incompletely revealed. The growth of the calculi is favored by the existence of secondary lesions. These may be exogenic in character, such as geographic peculiarities or type of nourishment; local, such as infection of the urinary passages, or anatomic changes; or they may be endogenous in character, owing to the alterations in the internal secretions or to heredity. The treatment has for its object the removal of the stone and the correction of the conditions favoring its growth.

Exophthalmic Goiter and Thyrotoxicoses.—Between 1921 and 1931, Breitner had operated on ninety-six patients presenting thyrotoxicosis and sixty-one presenting exophthalmic goiter. Of fifty patients whom he attempted to follow up, twenty-two gave reliable answers. He observed that complete development of the clinical picture coincides with enlargement of the thyroid and that operation in these cases results in a complete and lasting cure. The term "Morbus Basedow" is purely a clinical one. It may be further supported by the

evidence of a characteristic Basedow thyroid, the only contradictory evidence against which is the occasional finding in young persons of microscopic alterations characteristic of a genuine Basedow thyroid in the absence of all clinical manifestations of the disease. There are likewise occasional cases presenting clinical signs of exophthalmic disease without microscopic alterations in the thyroid characteristic of the disease. One must assume in such cases a "basedowification" of a colloid goiter or the development of a toxic adenoma, or some other functional change in a person with an exophthalmic constitution. The author concludes that the microscopic picture alone does not establish the diagnosis. Neither does it alter the clinical diagnosis. The thyroid in a case of acute exophthalmic goiter caused by a psychic upset will not show a typical microscopic picture of a genuine exophthalmic goiter. The gland here is in a state of increased functional activity. The psychic treatment has its place in the beginning. However, when the gland itself becomes a factor in the disease, the best results are obtained only by an attack on it. One must assume an exophthalmic constitution for the genuine cases of exophthalmic goiter. The causative factor may be a psychic insult or a disturbance in the endocrine balance (puberty, menopause, pregnancy). The purely functional origin of alteration leads in the course of the disease to morphologic alterations within the thyroid. The thyrotoxic state may be temporarily favorably modified by exhibition of iodine and thus reduce the hazards of the operative intervention. The effect of iodine therapy is most pronounced in the genuine cases of exophthalmic goiter. That is not the case in toxic adenoma, in which the iodine balance is entirely different from that in the exophthalmic goiter. The effect of iodine therapy in cases of septic origin designated by E. P. Sloan as "anaphylactic type" has not been worked out. In all the types, however, operative reduction of the size of the thyroid to the permissible minimum is the therapy of choice. The author finds that separate extracapsular ligation of all the four arteries of the thyroid does not enhance the therapeutic result.

Klinische Wochenschrift, Berlin

17: 489-520 (April 2) 1938. Partial Index

- Cevitamic Acid and Blood Protein Picture. A. Jezler.—p. 492.
Pathogenesis of Causalgia. A. Meyer.—p. 494.
Recent Investigations on Chronic Gastro-Enteritis. H. Dohn.—p. 497.
Heat Coagulation Test in Human Cerebrospinal Fluid. H. Rosegger.—p. 498.
*Hydrochloric Acid-Collargol Reaction, New Test of Cerebrospinal Fluid. C. Riebeling.—p. 501.
Disturbances of Calcium Resorption and Appearance of Tetany in Course of Chronic Catarrh of Small Intestine. G. Hetényi.—p. 506.

Hydrochloric Acid-Collargol Reaction in Cerebrospinal Fluid.—Riebeling says that the reaction described by him differs in principle from all former reaction in that it protects a colloid against a precipitating acid by means of cerebrospinal fluid in different dilutions. His reaction requires a freshly prepared five hundredth normal hydrochloric acid, made from tenth normal hydrochloric acid, and a solution of collargol (a preparation consisting of colloidal silver and silver oxide), which is prepared freshly from a 1:1,000 stock solution. Of a series of carefully cleansed tubes, of the type that are used for Wassermann tests, the first one contains 0.5 cc., the second 0.8 cc., the third 0.9 cc., the fourth 1.4 cc. and the fifth 1.9 cc. of five hundredth normal hydrochloric acid. Then are added 0.5, 0.2, 0.1, 0.1 and 0.1 cc. of cerebrospinal fluid. From the fourth tube, after thorough mixing, 0.5 cc. is withdrawn; from the fifth tube 1 cc. is taken and pipetted into the sixth tube; 1 cc. is pipetted into the seventh and so on to the twelfth tube. Thus the tubes contain the following dilutions of cerebrospinal fluid: 1:2, 1:5, 1:10, 1:15, 1:20, 1:40, 1:80, 1:160 to 1:2,560. To each of these dilutions is added 1 cc. of the collargol solution. Then the tubes are shaken by hand and are left standing for at least six hours. It is best to take the final reading the following morning. The author says that the method is simple, economical and easy to read. The difference between the positive and negative reaction is quite clear. Discussing the evaluation of the reaction the author says that this is easy only if the test is made together with one of the more customary reactions, usually the mastix or the colloidal gold chloride test. With the usual colloid reactions a differentiation between paralysis and cerebral syphilis

is not always possible and a cerebrospinal fluid from a patient with tumor may simulate a reaction for paralysis; however, in the hydrochloric acid-collargol reaction noticeable differences can be seen. Moreover, the latter reaction shows greater differences in the cerebrospinal fluids from cases of meningitis and of syphilis. The mastic and colloidal gold reactions do not always do this. Thus the described reaction is suited especially for these cases. It is of value also in cases in which there is a slight increase in protein, in which the mastic and colloidal gold tests generally fail.

Medizinische Klinik, Berlin

34: 381-420 (March 25) 1938. Partial Index

- Recognition and Treatment of Addison's Disease. H. Reinwein.—p. 381.
Hyperemesis Gravidarum. J. Meinertz.—p. 388.
Practical Test of Functional Capacity of Heart in Children. F. Hamburger.—p. 391.
Orthostatic Albuminuria. E. Becher.—p. 392.
*Fatty Degeneration of Cardiac Muscle in Deficient Oxygenation of the Blood. K. Hitzenger.—p. 394.
*Pulsation of Jugular Vein in Ascites. E. Lauda.—p. 396.
Therapy of Myocardial Infarct. K. Blumberger.—p. 397.

Fatty Degeneration of Cardiac Muscle.—Hitzenger says that the fatty degeneration of the cardiac muscle is clinically designated as "tigering." In reviewing the literature he shows that qualitative and quantitative changes in the blood are the chief factors in the development of tigering. It has been known to develop in a rather severe form in deficient hemopoiesis, especially in pernicious anemia. It is observed also in infectious diseases, such as diphtheria, scarlet fever and sepsis; in certain intoxications, in case of impairment of the coronary arteries and in pericarditic exudates that exert pressure. Then it is found as the final stage of hypertrophy of the cardiac muscle in valvular lesions, chronic disorders of the kidneys, emphysema, kyphoscoliosis and so on. In investigations on the influence of oxygen deficiency on organic functions, the author noticed tigering of the cardiac muscle in a case of symptomatic polycythemia in pulmonary emphysema. Later he observed four other cases of this type. In view of the fact that tigering of the cardiac muscle is usually ascribed to anemia, this observation at first surprised the author and so he investigated the problem further. He found that fatty degeneration of the cardiac muscle is the result of a deficient oxygenization of the blood. It develops in cases of polycythemia, when a hypoxemia of the arterial blood, resulting from an insufficiency of the respiratory organs, exists simultaneously. The tigering does not involve the entire heart uniformly but affects some parts more severely than others, in spite of the fact that the injurious factor acts on the entire heart. The most frequent localization of the tigering seems to be the left, large papillaris muscle. In one report on the distribution of the fatty degeneration, the chief localizations were mentioned in the following order: the cardiac stimulus conduction system, the left large papillaris muscle, the left and right cardiac walls, the right large papillaris muscle. It appears that those parts of the heart are most severely involved which functionally are most active. This seems to indicate that during hypoxemia these parts already receive an inadequate supply of oxygen, when for the less active parts the oxygen supply is still adequate. The simultaneous existence of diseases of the coronary arteries seems to promote fatty degeneration.

Pulsation of Jugular Vein in Ascites.—Lauda says that, when in cases of severe ascites a pulsation of the jugular vein was synchronous with the apical impulse of the heart, it was often regarded as a justification for the diagnosis of tricuspidal insufficiency. However, a more exact examination revealed the incorrectness of this assumption. The observed positive venous pulse was not a regurgitating one for in response to digital compression of the distal section of the vein either the jugular vein became empty or the venous pulse lessened in the almost empty vein. The most peculiar aspect of the pulse was that it changed with the position of the patient and that in certain postures it disappeared entirely. The topographic relation of the aorta to the upper vena cava seemed a possible explanation of the transmitted pulse. The aorta, because of its nearness to the vena cava, in case of elevation of the diaphragm and of the involved turning of the heart, is pushed close to the vena cava, so that the ascending part of the aorta is pressed into the vena

cava and the aortic pulse is transmitted to the blood in the vena cava superior and also in the jugular vein. When the positional relation of the aorta to the vena cava becomes less close as the result of a postural change in the patient, the jugular pulsation is lessened or disappears completely. It was found that the phenomenon occurs chiefly in cases of ascites in which the heart is of normal size; that is, in cirrhosis. In cardiac insufficiency with ascites and diaphragmatic elevation, on the other hand, it is either absent or of a mild degree. The author thinks that this might be due to the fact that an enlarged heart is not so prone to change its position. Moreover, it appears that a slight stasis of the jugular vein or of the vena cava favors the development of the phenomenon, whereas the excessive filling of the venous circulation in case of cardiac stasis inhibits the phenomenon.

Zeitschrift für Orthopädie, Stuttgart

67: 321-432 (April 12) 1938. Partial Index

- *Dyschondroplasia (Multiple Enchondromatosis—Ollier's Disease). E. Gäde.—p. 321.
Congenital Wing Membrane and Its Conservative Treatment. W. Marquardt.—p. 379.
*Spontaneous Cure of So-Called Congenital Dislocation of Hip Joint: Ten Cases. S. Nagura and Y. Shirahama.—p. 387.
Form and Function of Feet of Mountain Nomads in Anatolia. S. Irmak.—p. 396.

Chondrodysplasia.—Gäde directs attention to the fact that there is much confusion in the terminology of Ollier's disease. He says that the term chondromatosis is employed rarely. In the romance literature the term dyschondroplasia is in use. In the English literature the term chondrodysplasia is generally applied to the disease that was described by Ollier. In the German literature the term "Ollier's growth disturbance" has been in use and has been identified with the unilateral type of chondrodysplasia. As such it has been strictly differentiated from the bilateral form of the same disease. The author shows that this differentiation is not justified. Before giving his opinion about the terminology he reports five cases. The first one was a bilateral, multiple chondrodysplasia of the skeleton, the second one a multiple chondrodysplasia of the left hand, the third one a multiple chondrodysplasia of both hands and of the left foot, the fourth one a multiple chondrodysplasia of the right hand and the fifth one a chondrodysplasia of the fourth finger of the left hand. Surgical measures, such as supracondylar osteotomy, removal of chondromatous masses and implantation of bone splints produced favorable results. In order to clarify the problem of terminology of Ollier's disease, the author reviewed and compared ninety cases of multiple chondrodysplasia from the literature. He demonstrates that there is no unilateral type of chondrodysplasia, which in the German literature is identified with "Ollier's growth disturbance," but that there is only a more or less disseminated chondrodysplasia. The author says further that, although chondrodysplasia has been regarded as a hereditary disorder, there is no justification for this. The author found likewise the predominance of chondrodysplasia in the male sex not as great as had been stated by some authors. In order to throw light on the etiology, interferometric measurements were made on the blood in three of the author's cases. The results indicate that certain hormones might be regarded as having a causal role but as yet these observations should be estimated with great reserve. The prognosis of the disorder as regards malignant degeneration is favorable. The treatment should be surgical if possible; the chondromatous masses should be removed in order to avoid the development of deformities and spontaneous fractures. If deformities have already developed, the treatment should be partly a conservative-orthopedic one and partly an operative-correcting one.

Congenital Dislocation of Hip Joint.—Nagura and Shirahama made roentgenologic studies in ten cases in which congenital dislocation of the hip joint healed spontaneously. They observed spontaneous cure on both sides in two cases of bilateral dislocation and on one side in eight cases of bilateral dislocation; that is, twelve joints were cured spontaneously. The ten cases were found among a material of 128 cases. The authors conclude from the observations on this material that spontaneous cure of congenital dislocation of the hip joint occurs more often than has been assumed heretofore.

Wiener klinische Wochenschrift, Vienna

51: 449-472 (April 22) 1938

- *Therapy of Thrombopenic Purpura by Means of Kephriine Hydrochloride. H. Fleischhacker.—p. 449.
 Urgency of Interventions After Injuries on Skull. R. Mauritz.—p. 451.
 Recent Opinions on Coagulation of Blood and Hemostasis. F. Schärer.—p. 453.
 Ultra Short Waves in Treatment of Poliomyelitis. A. Colarizi.—p. 456.
 Manner of Disappearance of Delusions in Patients with Progressive Paralysis Who Have Received Malaria Therapy. V. Vujčić.—p. 458.
 Physical and Balneologic Therapy of Disturbances of Peripheral Arteries. A. Mládek.—p. 460.

Therapy of Thrombopenic Purpura by Kephriine Hydrochloride.—Fleischhacker says that since a report by Klima about the favorable effects of kephrine hydrochloride in patients with thrombopenia, he used this preparation in a number of cases. He admits that in the acute, particularly the anaphylactic, form the estimation of the efficacy of kephrine hydrochloride is difficult, because in such cases the hemorrhages usually stop when the medicament against which the patient is hypersensitive is discontinued. More convincing are the results that are obtained in the chronic essential thrombopenias. In some of these the thrombocytes are reduced; there is a positive Rumpel-Leede stasis phenomenon and the slightest injuries cause extensive hematomas. These cases, as a rule, responded rapidly to treatment with kephrine hydrochloride. The hemorrhagic tendency could usually be arrested and the appearance of new hemorrhages stopped after one or two days of treatment. The thrombocytes usually increased. In some of the cases, normal figures could be obtained during the time of intensive treatment. The quantity of kephrine hydrochloride which is necessary to arrest the hemorrhages differs in the individual cases. As a rule the oral administration is sufficient, but during the acute stage it can be supported by intramuscular injection. When a certain degree of coagulability had been reached in chronic cases, the author usually discontinued the treatment. When this was done the thrombocytes often decreased again and hemorrhages recurred, but renewal of the treatment usually reestablished normal conditions in a comparatively short time. In the chronic cases, in which the thrombocyte values are constantly low, it will have to be decided whether continuous medication with kephrine hydrochloride will be sufficient or whether splenectomy will be necessary. In this connection the author points out that, even after splenectomy, recurrences have been known and that splenectomy involves a comparatively high mortality. In cases in which thrombopenia and hemorrhages recurred several years after splenectomy and in which all measures failed, kephrine hydrochloride proved effective. Moreover, the administration of kephrine hydrochloride may be valuable in preparing the patient for a splenectomy. In two cases of hemorrhagic diathesis in which thrombopenia developed as the result of an acute myeloblastosis, however, medication with kephrine hydrochloride failed completely.

Problemy Tuberkuleza, Moscow

Pp. 1-148 (No. 12) 1937. Partial Index

- Anatomopathologic Classifications of Pulmonary Tuberculosis. V. G. Shtefko and V. T. Puzik.—p. 4.
 Hematogenous Types of Pulmonary Tuberculosis. M. P. Borok.—p. 16.
 Nourishment in Tuberculosis. I. M. Model.—p. 32.
 Blood Transfusion in Chronic Tuberculosis of Lymph Nodes and Serous Surfaces. Ya. O. Krizhevskiy.—p. 40.
 *Early Artificial Pneumothorax. P. B. Torkanovskiy.—p. 44.
 Errors in Induction and Maintenance of Artificial Pneumothorax. A. S. Furman.—p. 55.

Early Artificial Pneumothorax.—Torkanovskiy reports his observations on the changes produced in the normal lungs by artificial pneumothorax. He had subjected fifteen patients with epilepsy to artificial pneumothorax with the view of diminishing the number of attacks. The patients were first studied as to the circumference of the chest, the height, weight, spirometry, pulse, respirations, blood pressure, roentgenograms, p_{O_2} of the blood, alveolar tension, basal metabolism, potassium and calcium blood content, erythrocytes, blood albumins, acid-base index of the urine and blood gases. Gradual repeated insufflations, begun on the left side and extended to the right side, were carried out until 1,000 cc. of air was introduced into each pleural cavity. There were no complications of any

kind. Subjective complaints of difficulty in breathing in the course of the first day occurred only in cases in which 1,000 cc. of air was introduced into each pleural sac in one sitting. A complete collapse of the left lung, persisting for from two to three weeks, was obtained only after repeated insufflations of 1,000 cc. of air. The author was not able to obtain a total collapse of the right lung in any case. The alterations in the pulse, respirations and blood pressure following the introduction of pneumothorax after the first as well as after repeated insufflations were so insignificant as to suggest that pneumothorax causes no alterations in a normal lung. The acid-base metabolism remained uninfluenced. The erythrocyte count and hemoglobin remained about the same. There was no exudation into the pleural sac in any of the cases. The alterations noted were those of loss of weight and the diminution in the circumference of the chest of from 1 to 4 cm. The author was not able to confirm the original hypothesis underlying the pneumothorax therapy of epilepsy; namely, the shift from alkalosis to acidosis. He suggests that the beneficial effect on epilepsy may be due to the action of the inflated air on the sympathetic and parasympathetic nerve fibers running in the pleural leaves. He concludes that the fewer pathologic alterations in the lung, the safer the induction of pneumothorax. He therefore takes exception to the widely adopted notion that one must demonstrate a cavity and tubercle bacilli before resorting to the collapse therapy and suggests that the method be applied in earlier cases—those with positive roentgenograms and signs of progression.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

82: 1549-1682 (April 2) 1938. Partial Index

- Studies on Basal Metabolism of Children. M. De Bruin.—p. 1557.
 *Atropine Therapy in Postencephalitic Parkinsonism: Results and Complications. F. Grewel.—p. 1569.
 Ocular Complications in Weil's Disease. M. S. Koster.—p. 1577.

Atropine Therapy in Postencephalitic Parkinsonism.—Grewel describes five years' experiences with ambulatory atropine therapy in patients with postencephalitic parkinsonism. Observations on about thirty patients convinced him that the medication must be individualized, for whereas some patients may tolerate the oral administration of 10 or even 12 mg. of atropine sulfate three times daily, others may not be able to tolerate even much smaller doses. The author never increased the dosage to more than 35 mg. a day, because such large doses involve the danger of complications. As a rule, the daily dose does not exceed 7 or 9 mg. Moreover, even in the individual patient the tolerance for atropine sulfate may change in the course of time. The optimal dose often may become somewhat reduced in the course of years so that it seems justified to inquire whether, in addition to the symptomatic effect, atropine sulfate may not also have a causal therapeutic influence. In some patients, who in the end felt comparatively well without medication and in whom only a certain stiffness remained, such a possibility may be considered. Sudden interruption of the medication involves danger, because of the symptoms of abstinence; however, the dangers of irregular medication are probably negligible. Discussing the symptoms that are favorably influenced by the atropine medication, the author mentions rigidity, amyostasia and other coordination disturbances. The reduction in tremor is often quite striking and this is a great encouragement for the patients. The visual cramps, the pulsation phenomena and the hypersalivation are likewise favorably influenced and the immobile facies disappears almost entirely. Speech disturbances, involuntary laughter, ties and spastic torticollis are hardly at all influenced. It is noteworthy that the psychotic symptoms often disappear under the influence of treatment with atropine. On the whole, the author found the effects of the atropine therapy satisfactory, but he is unable to share the great enthusiasm that at first prevailed, because, as is indicated by the persisting speech disturbances, the coordination is never completely restored. In giving his attention to the disorders that may result from continued atropine therapy, the author mentions paranoid and hallucinatory psychoses. In several of his patients a paranoid psychosis developed. He describes these cases and suggests that the cerebral damage and the chronic intoxication work together in the elicitation of this psychosis.

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SUPPOSED ROLE OF THE ADRENALS IN HYPERTENSION

AN EXPERIMENTAL INVESTIGATION

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Our experiments constitute part of an investigation on the alleged relation of the adrenal medulla to certain diseases, particularly diabetes mellitus and hypertension. The supposition of such a relation is a basis for the clinical practice of surgical intervention at the adrenals or roentgen irradiation of the adrenal region as a therapeutic measure. Therefore it is important to determine if possible whether this alleged relationship can be supported by unequivocal experimental evidence.

The prevailing concept that increased epinephrine secretion from the adrenal glands has an important role in the etiology and the pathology of hypertension rests largely on the experimental basis for the theory of an "emergency" function of the adrenals. In a discussion of their experiments on epinephrine secretion during emotional excitement, on which the well known emergency theory rests, Cannon and de la Paz¹ stated:

Injected epinephrine is capable of inducing an atheromatous condition of the arterial wall in rabbits, especially in elderly individuals, and is also capable of evoking hyperglycemia with glycosuria. As Ascher has shown, by prolonged stimulation of the splanchnic nerves, prolonged secretion of epinephrine with maintained high blood pressure can be produced. In the light of the results here reported the temptation is strong to suggest that some phases of these pathologic states are associated with the strenuous and exciting character of modern life acting through the adrenal glands.

They² further suggested the possibility that "some of the adrenal secretion set free by nervous stimulation returns to the glands in the blood stream, and, within limits, stimulates them to further activity" and in this manner produces an "autogenous continuance of adrenal secretion."

If this occurs, it is conceivable that it might lead to continued liberation of epinephrine in sufficient

amounts to cause a persistent elevation of blood pressure. However, it seems paradoxical that a physiologic mechanism presumably evolved to serve the organism in emergencies should at the same time constitute a serious potential menace. For, if the aforementioned suggestions, made by Cannon and de la Paz, are carried to a logical conclusion, emotional excitement should initiate a cycle of continuous secretion of epinephrine and inevitably lead to development of diabetes and hypertension. Unless it is assumed that the adrenals are soon fatigued, the question arises how such a cycle would be terminated. It has been demonstrated that the peripheral mechanism for secretion of epinephrine is not readily fatigued.³ Repeated splanchnic stimulation at short intervals over many hours was performed without causing adrenal fatigue. When the experiment was terminated the adrenal was still capable of responding further to splanchnic stimulation. Not only was the output of epinephrine increased by the repeated stimulation but its production by the gland was augmented.

The experiments of Dragstedt, Prohaska and Harms⁴ on experimental hypertension demonstrate that continuous intravenous injection of epinephrine in dogs in amounts corresponding to from five to fifteen times the average normal quantity secreted from the adrenals, as determined by Stewart and Rogoff,⁵ cannot be continued for longer than a few days without serious or fatal consequence. Similar results, occurring within a few hours, were observed by us when doses three or more times as large as those employed by Dragstedt and his co-workers were administered. Our experiments support the conclusion, drawn by Dragstedt, Prohaska and Harms, that "it seems very probable that a degree of hyperadrenalinemia sufficient to produce hypertension would soon cause the death of the individual from other systemic effects of the hormone" and that "for this reason it does not seem probable that persistent hypertension in man will be found to be due to hyperadrenalinemia."

If epinephrine secretion is in any way related to production of hypertension, it would seem probable that other factors might render the circulatory or vasomotor apparatus hypersensitive to epinephrine, which could then induce hypertension in the amounts ordinarily secreted. We are attempting to study this possibility in another investigation. The present report includes

From the Physiological Laboratory, University of Chicago.
A preliminary report has been published (Rogoff, J. M.; Nixon, E. Nola; Stewart, George N., and Marcus, Emanuel: *Proc. Soc. Exper. Biol. & Med.* 37: 715 [Jan.] 1938).

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1. Cannon, W. B., and de la Paz, D.: The Stimulation of Adrenal Secretion by Emotional Excitement, *J. A. M. A.* 56: 742 (March 11) 1911; *Proc. Am. Philos. Soc.* 50: 226, 1911.

2. Cannon, W. B., and de la Paz, D.: Emotional Stimulation of Adrenal Secretion, *Am. J. Physiol.* 28: 64, 1911.

3. Stewart, G. N., and Rogoff, J. M.: The Liberation of Epinephrine from the Adrenal Glands by Stimulation of the Splanchnic Nerves and by Massage, *J. Pharmacol. & Exper. Therap.* 8: 205 (May) 1916; The Spontaneous Liberation of Epinephrine from the Adrenals, *ibid.* 8: 479 (Sept.) 1916.

4. Dragstedt, L. R.; Prohaska, J. V., and Harms, H. P.: The Effect of the Continuous Intravenous Injection of Epinephrine on the Blood Pressure, *Am. J. Physiol.* 119: 298 (June) 1937; *Ann. Surg.* 106: 857 (Nov.) 1937.

5. Stewart, G. N., and Rogoff, J. M.: The Average Epinephrine Output in Cats and Dogs, *Am. J. Physiol.* 60: 235 (Feb.) 1923.

quantitative studies on the output of epinephrine from the adrenals and on its disappearance from the systemic circulation after intravenous injection of various amounts.

QUANTITATIVE EXPERIMENTS ON THE RATE OF
SECRETION OF EPINEPHRINE AFTER INTRA-
VENOUS ADMINISTRATION OF
EPINEPHRINE

We made quantitative measurements with eleven dogs of the output of epinephrine from the adrenals to determine whether intravenous injection of epinephrine is capable of modifying the rate of secretion. Quantities ranging from ten to 500 times the average amount of epinephrine ordinarily secreted by the adrenals per minute were introduced. The epinephrine concentration in the blood and the rate of secretion were determined by the method of Stewart and Rogoff. In some of the experiments the results were confirmed by the method recently described by Rogoff,⁶ in which sensitized eye reactions in cats are employed.

In some of the experiments the epinephrine was administered at a constant rate; in others it was given in a single injection, to simulate the "outburst" from the adrenals that is alleged to occur during emotional excitement. The smallest dose employed, i. e., 0.002 mg. per kilogram of body weight a minute, caused an elevation of blood pressure during the injection in anesthetized dogs; striking reactions in the blood pressure were produced by the larger doses.

For constant injection we employed an apparatus devised by one of us (J. M. R.). The essential construction of the device includes a constant speed motor which drives a nugged disk by a hard rubber friction drive; the disk operates a pinion and gear reduction to a screw which is kept in constant motion, propelling forward the piston of one, two or three syringes. When syringes with a capacity of 50 cc. are used, adjustment can be made so that any quantity between 0.7 cc. and 7.5 cc. a minute can be delivered at a constant rate of flow against any pressure that might be met in the blood vessel. Further alteration of the range of quantities delivered can be accomplished by employing syringes of different capacity.

The results of our experiments on the rate of liberation of epinephrine from the adrenal glands under the influence of intravenous administration of epinephrine are illustrated in the following condensed protocols:

EXPERIMENT 1.—In a male dog weighing 14.1 Kg. a cava pocket was prepared with the aid of urethane anesthesia. When the first specimen of adrenal blood was obtained, the blood flow was 22 Gm. a minute and the blood pressure 110 mm. of mercury. Constant intravenous injection of 0.028 mg. of epinephrine a minute was performed for three minutes (corresponding to ten times the normal average rate of adrenal secretion); the maximum blood pressure was 118 mm. The second specimen of adrenal blood was obtained immediately after the injection; the blood flow was 13.9 Gm. a minute and the blood pressure from 108 mm. to 94 mm. The third specimen of adrenal blood was obtained during electrical stimulation of the branchial nerve. Quantitative assay was unsatisfactory; differences between an epinephrine concentration of 1:5,000,000 and one of 1:10,000,000 were not detectable with the test object. All three specimens were found to have a concentration within this range, indicating qualitatively a normal output and no significant influence exerted by injected epinephrine or by sensory stimulation.

EXPERIMENT 2.—In a dog weighing 10.25 Kg. a cava pocket was prepared with the aid of pentobarbital sodium anesthesia. When the first specimen of adrenal blood was obtained the

blood flow was 14.6 Gm. a minute. Constant intravenous injection of 0.04 mg. of epinephrine a minute was performed for one minute (corresponding to twenty times the normal average rate of adrenal secretion). The second specimen of adrenal blood was obtained immediately after the injection; the blood flow was 10.5 Gm. a minute. Twenty-five minutes later, constant injection of 0.04 mg. of epinephrine for one minute was repeated, and immediately thereafter the third specimen of adrenal blood was obtained. The blood flow was 8.25 Gm. a minute. The first specimen was assayed at an epinephrine concentration 1:6,500,000, corresponding to an output of 0.00224 mg. a minute for the dog, or 0.00022 mg. per kilogram a minute. The second specimen was assayed at a concentration of 1:5,000,000 and the third at a concentration of 1:4,000,000, both concentrations corresponding to an output of 0.0021 mg. a minute for the dog, or 0.0002 mg. per kilogram a minute.

EXPERIMENT 3.—In a dog weighing 8.75 Kg. a cava pocket was prepared with the aid of pentobarbital sodium anesthesia. When the first specimen of adrenal blood was obtained, the blood flow was 10.7 Gm. a minute and the blood pressure 132 mm. of mercury. Constant intravenous injection of 0.036 mg. of epinephrine was performed for one minute (corresponding to twenty times the normal average rate of adrenal secretion). The second specimen of adrenal blood was collected during one minute, beginning thirty seconds before the end of the injection; the blood flow was 9.5 Gm. a minute and the maximum blood pressure 156 mm. The first specimen was assayed at an epinephrine concentration of approximately 1:50,000,000, corresponding to an output of 0.000214 mg. a minute for the dog, or 0.000024 mg. per kilogram a minute. The second specimen was assayed at a concentration of approximately 1:20,000,000, corresponding to an output of 0.00047 mg. a minute for the dog, or 0.000053 mg. per kilogram a minute.

EXPERIMENT 4.—In a female dog weighing 7 Kg. a cava pocket was prepared with the aid of pentobarbital sodium anesthesia. The blood pressure was 112 mm. of mercury. Constant intravenous injection of 0.07 mg. of epinephrine a minute was performed (corresponding to fifty times the normal average rate of adrenal secretion). The first specimen of adrenal blood was obtained ten minutes after the beginning of the injection; the blood flow was 6.2 Gm. a minute and the maximum blood pressure 182 mm. The second specimen of adrenal blood was obtained twenty minutes after the beginning of the injection; the blood flow was 9.6 Gm. a minute and the blood pressure 142 mm. The first specimen was assayed at an epinephrine concentration of 1:4,000,000, corresponding to an output of 0.00155 mg. a minute for the dog, or 0.00022 mg. per kilogram a minute. The second of the specimens was assayed at a concentration of 1:5,000,000, corresponding to an output of 0.00192 mg. a minute for the dog, or 0.00027 mg. per kilogram a minute.

EXPERIMENT 5.—In a female dog weighing 9.35 Kg. a cava pocket was prepared with the aid of urethane anesthesia. The blood pressure was 104 mm. of mercury. A constant intravenous injection of 0.187 mg. of epinephrine a minute was performed (corresponding to 100 times the normal average rate of adrenal secretion). A specimen of adrenal blood was obtained six minutes after the beginning of the injection; the blood flow was 13.98 Gm. a minute and the maximal blood pressure 170 mm. Simultaneously with the collection of the adrenal blood, a specimen of arterial blood was withdrawn from the abdominal aorta. The adrenal blood was assayed at an epinephrine concentration of 1:1,000,000, corresponding to an output of 0.0139 mg. a minute for the dog, or 0.00148 mg. per kilogram a minute. The epinephrine concentration in the arterial blood was determined to be slightly less than that in the adrenal blood.

EXPERIMENT 6.—In a female dog weighing 9.65 Kg. a cava pocket was prepared with the aid of urethane anesthesia. Constant intravenous injection of 0.386 mg. of epinephrine a minute was performed for two minutes (corresponding to 200 times the normal average rate of adrenal secretion). When a specimen of adrenal blood was obtained just after the injection, the blood flow was 12.3 Gm. a minute and the blood pressure from 210 to 170 mm. of mercury. A specimen of arterial blood was withdrawn from the abdominal aorta thirty seconds after the specimen of adrenal blood was obtained; the blood pressure was 129 mm. The adrenal specimen was assayed at an epinephrine con-

6. Rogoff, J. M.: A Sensitive Method for Quantitative Estimation of Epinephrine in Blood, *Proc. Soc. Exper. Biol. & Med.* 36:441 (May) 1937.

centration of 1:4,000,000, corresponding to an output of 0.003 mg. a minute for the dog, or 0.00031 mg. per kilogram a minute. The epinephrine concentration in the arterial blood was determined to be approximately 1:10,000,000.

EXPERIMENT 7.—In a female dog weighing 8.9 Kg. a cava pocket was prepared with the aid of urethane anesthesia. The blood pressure was 95 mm. of mercury. Constant intravenous injection of 0.54 mg. of epinephrine a minute was performed for two minutes (corresponding to 300 times the normal average rate of adrenal secretion). A specimen of adrenal blood was obtained during the ascent of the blood pressure, which reached a maximum of 205 mm.; the blood flow was 14 Gm. a minute. During the injection and simultaneously with the collection of the adrenal blood, a sample of arterial blood was withdrawn from the abdominal aorta. The blood pressure after the injection fell to 88 mm. The adrenal blood was assayed at an epinephrine concentration of 1:1,500,000, corresponding to an output of 0.00933 mg. a minute for the dog, or 0.00105 mg. per kilogram a minute. The epinephrine concentration in the arterial blood differed but little from that in the adrenal blood.

EXPERIMENT 8.—In a male dog weighing 9.5 Kg. a cava pocket was prepared with the aid of urethane anesthesia. When the first specimen of adrenal blood was obtained, the blood flow was 6.5 Gm. a minute and the blood pressure 68 mm. of mercury. Constant intravenous injection of 1 mg. of epinephrine a minute was performed for two minutes (corresponding to 500 times the normal average rate of adrenal secretion). The second specimen of adrenal blood was obtained within thirty seconds after the injection, while the blood pressure was still at the maximum height reached, 185 mm.; the blood flow was 15.5 Gm. a minute. The third specimen of adrenal blood was obtained five and one-half minutes after collection of the second; the blood flow was 2.33 Gm. a minute and the blood pressure 40 mm. The first specimen was assayed at an epinephrine concentration of 1:3,000,000, corresponding to an output of 0.0021 mg. a minute for the dog, or 0.00022 mg. per kilogram a minute. The second specimen was assayed at a concentration of 1:500,000, corresponding to an output of 0.031 mg. a minute for the dog, or 0.0032 mg. per kilogram a minute. The third specimen was assayed at a concentration of 1:5,000,000, corresponding to an output of 0.00047 mg. a minute for the dog, or 0.00005 mg. per kilogram a minute.

EXPERIMENT 9.—In a female dog weighing 8.5 Kg. a cava pocket was prepared with the aid of urethane anesthesia. When the first specimen of adrenal blood was obtained, the blood flow was 16.9 Gm. a minute and the blood pressure 80 mm. of mercury. Intravenous injection, a single dose of 0.5 mg. of epinephrine, was performed (corresponding to 300 times the normal average adrenal output a minute). The blood pressure rose to a maximum level of 188 mm. The second specimen of adrenal blood was obtained during the return of the blood pressure; the blood flow was 12.25 Gm. a minute and the blood pressure at the end of the collection 56 mm. The third specimen of adrenal blood was obtained fifteen minutes after the second; the blood flow was 13.2 Gm. a minute and the blood pressure 58 mm. The three specimens showed but little difference in epinephrine concentration; they were assayed at a concentration of 1:4,000,000, corresponding to outputs of 0.004 mg., 0.0031 mg. and 0.0033 mg. a minute for the dog, or 0.00048 mg., 0.00036 mg. and 0.00039 mg. per kilogram a minute for the first, second and third specimens, respectively.

EXPERIMENT 10.—In a male dog weighing 9.5 Kg. a cava pocket was prepared with the aid of urethane anesthesia. When the first specimen of adrenal blood was obtained the blood flow was 11.4 Gm. a minute and the blood pressure 88 mm. of mercury. Intravenous injection, a single dose of 0.8 mg. of epinephrine, was performed (corresponding to 450 times the normal average adrenal output per minute). The blood pressure rose to a maximum of 175 mm. The second specimen of adrenal blood was obtained during the period of elevated blood pressure; the blood flow was 16.6 Gm. a minute. The third specimen of adrenal blood was obtained seven minutes later; the blood flow was 7.1 Gm. a minute and the blood pressure 67 mm. The first specimen was assayed at an epinephrine concentration of 1:5,000,000, corresponding to an output of 0.00228 mg. a minute for the dog, or 0.00024 mg. per kilogram a minute. The second

specimen was assayed at a concentration of 1:3,000,000, corresponding to an output of 0.0055 mg. a minute for the dog, or 0.00057 mg. per kilogram a minute. The third specimen was assayed at a concentration of 1:4,000,000, corresponding to an output of 0.00177 mg. a minute for the dog, or 0.000186 mg. per kilogram a minute.

EXPERIMENT 11.—In a male dog weighing 10.25 Kg. a cava pocket was prepared with the aid of pentobarbital sodium anesthesia. When the first specimen of adrenal blood was obtained the blood flow was 9.65 Gm. a minute and the blood pressure 104 mm. of mercury. Intravenous injection, a single dose of 1 mg. of epinephrine, was performed (corresponding to 500 times the normal average adrenal output a minute). The blood pressure rose to a maximum level of 225 mm. The second specimen of adrenal blood was obtained during the ascent of the blood pressure; the blood flow was 10 Gm. a minute. Quantitative assay of the epinephrine concentration in the first specimen was not satisfactory; qualitatively, this specimen was much weaker than the second. The second specimen was assayed at an epinephrine concentration of 1:750,000, corresponding to an output of 0.0133 mg. a minute for the dog, or 0.0013 mg. per kilogram a minute.

The evidence derived from these experiments is against the probability of an autogenous continuance of adrenal secretion produced by circulating epinephrine. Constant intravenous administration of epinephrine, in amounts comparable to the rate of adrenal secretion under powerful stimulation, did not alter the output of epinephrine from the glands, although elevation of blood pressure occurred in every instance; nor was the epinephrine concentration in the blood of the adrenal vein different from that usually found in normal dogs under ordinary experimental conditions.

Increase in the rate of secretion of epinephrine up to twenty or thirty times the normal rate can be produced by electrical excitation of the splanchnic nerves⁷ or by the action of certain drugs.⁸ In dogs 1, 2, 3 and 4, quantities of epinephrine up to fifty times the normal average amount liberated by the adrenals were administered.

For some unknown reason the initial output of epinephrine in dog 3 was exceedingly low. Nevertheless, although the calculated output during the injection of epinephrine is double the initial output, the latter was not even increased to a level approaching the normal rate of liberation. It has been found that an increase can be accomplished by splanchnic stimulation under similar circumstances.⁹ It would seem that a low rate of secretion should be favorable for obtaining an increase, especially when the stimulus presumably would act on the peripheral secretory mechanism.

When the rate of blood flow through the adrenals is not diminished, an increase in the concentration of epinephrine indicates augmentation of the rate of liberation. In these experiments, however, the increased concentration of epinephrine in the blood of the adrenal vein may have been due chiefly, if not entirely, to the injected epinephrine in the circulation. Owing to the relatively high rate of blood flow through the adrenals, the blood of the adrenal vein is largely arterial and, to a certain extent, reflects the epinephrine concentration in the arterial blood; therefore, when large quantities of epinephrine are injected, the increased concentration may lead to an erroneous interpretation of increased

7. Stewart, G. N., and Rogoff, J. M.: Effect of Stimulation of Afferent Nerves upon the Rate of Liberation of Epinephrine from the Adrenals, *Am. J. Physiol.* **69**: 605 (Aug.) 1924.

8. Stewart, G. N., and Rogoff, J. M.: The Action of Drugs upon the Output of Epinephrine from the Adrenals: Strychnine, *J. Pharmacol. & Exper. Therap.* **13**: 95 (May) 1919; The Action of Drugs upon the Output of Epinephrine from the Adrenals: Nicotine, *ibid.* **13**: 361 (July) 1919.

9. Rogoff, J. M., and Nixon, E. Nola: Epinephrine Output from the Adrenals in Experimental Diabetes, *Am. J. Physiol.* **120**: 440 (Nov.) 1937.

rate of secretion by the adrenals. This possibility is demonstrated by the results obtained in the dogs receiving massive doses of epinephrine.

Thus, in dogs 5 and 7, specimens of blood from the adrenal vein were collected while large amounts of epinephrine were being introduced into the circulation; arterial blood, taken from the aorta, was obtained simultaneously with the collection of adrenal blood. The epinephrine concentration was practically the same in the arterial and in the adrenal blood, and the calculated output from the adrenals appeared higher than normal. In dog 6, however, adrenal blood taken after the injection of a large dose of epinephrine showed but little, if any, increase in output; arterial blood taken shortly thereafter showed an epinephrine concentration too low to modify significantly the calculated output from the adrenals.

Similar results were obtained in the animals (dogs 9, 10 and 11) to which large amounts of epinephrine were administered in single injections, to simulate an outburst from the adrenals. The apparent increase in the output of epinephrine was in every case due to the fact that there was a large amount of circulating epinephrine for a brief period after the injection, for only those specimens of adrenal blood which were collected during the period of pressor activity of the injected epinephrine showed a calculated increase in output from the adrenals.

Of course, although the epinephrine concentration in the arterial blood roughly paralleled that of the adrenal blood, it would be difficult to maintain that a small increase in output is not included in the calculated, apparent increase. However, if such an increase does occur it is brief, for as soon as the pressor effect of the injected epinephrine subsides it is no longer possible to demonstrate an apparent increase in output from the adrenals. Indeed, our experiments indicate the probability that immediately after the hemodynamic effects of the injected epinephrine there is a brief period of diminished output of epinephrine from the adrenals (dogs 8 and 10), the output returning to the original level within fifteen minutes (dog 9).

If epinephrine is capable of exerting an inhibitory action on the adrenal medulla, Elliott's¹⁰ observation that the store of epinephrine in the adrenal is diminished after injections of epinephrine might be explained by a possible inhibitory influence on the rate of production. At any rate, diminished store alone is not adequate evidence of increased liberation of epinephrine from the adrenals; at most it affords information on the balance between production and liberation.

QUANTITATIVE EXPERIMENTS ON THE DURATION OF EFFECTIVE CONCENTRATIONS OF EPINEPHRINE IN THE SYSTEMIC CIRCULATION

The brief hemodynamic effect of a single intravenous injection of epinephrine is well known. In view of the subject under investigation, we performed thirty-two quantitative experiments, on fifteen dogs, to determine whether some of the injected epinephrine might be retained in the blood longer than the period corresponding to its pressor action, especially when relatively large amounts are administered constantly over a long period.

Epinephrine was introduced intravenously in amounts equivalent to the increased quantities secreted from the adrenals under powerful stimulation.¹¹ From ten to

fifty times the average amount normally secreted by the adrenals was administered at a constant rate of injection. Systemic blood was obtained at intervals during and after the injections, which were continued for periods ranging from thirteen to ninety-four minutes, from anesthetized and nonanesthetized animals.

In most of these experiments we used the serum instead of defibrinated blood for determination of the epinephrine concentration. This is advantageous when the concentration is low, since it has been found that all the epinephrine in the blood is in the serum or the plasma.¹² Thus, a concentration too weak for detection in the blood often may be detected quantitatively in the serum, in which the concentration is approximately twice as great. Specimens of blood were obtained (a) from the left ventricle or the femoral artery, (b) simultaneously from the abdominal aorta and the vena cava, (c) simultaneously from the right ventricle and the femoral artery and (d) from both ventricles, from one to three minutes apart, the order of collection being reversed in different experiments.

We found that intravenously injected epinephrine disappears from the circulation so rapidly that it is rarely detectable in the blood beyond the period of its pressor action. These results, on dogs, confirm the unpublished results on cats, obtained earlier by Rogoff and Wasserman at Western Reserve University. In both dogs and cats, when single injections of amounts up to about ten or fifteen times the average normal output of the adrenals a minute have been given, epinephrine can no longer be detected in the systemic (arterial) circulation after one complete circuit of the blood. This is true also when such amounts are injected constantly over relatively long periods; as soon as the injection is stopped and the blood pressure returns to the original level, the epinephrine cannot be found in the blood with sensitive test objects. When a quantity equal to from twenty-five to fifty or more times the average normal output of the adrenals a minute is administered in a single injection, approximately one half or one fourth of the epinephrine may be detected in arterial blood obtained within one-half or one minute after the injection.

Rarely was an epinephrine reaction produced by the serum when blood was obtained two or more minutes after a single injection of epinephrine, although sensitive test objects were often available. When large amounts of epinephrine were injected at a constant rate for an hour or longer, a small reaction was occasionally observed for some minutes (in one instance up to twenty minutes) after the end of the injection. However, prolonged administration of such large doses is not well tolerated by the animals.

Our experiments demonstrate that epinephrine disappears rapidly from the systemic blood when it is introduced into the circulation in amounts equivalent to those liberated by the adrenals under strong stimulation. For example, epinephrine was injected intravenously at a constant rate of 0.038 mg. a minute in a dog weighing 12.8 Kg. Arterial blood obtained twenty-two minutes after the beginning of the injection contained an epinephrine concentration of approximately 1:200,000,000. A specimen obtained shortly after the end of the injection was assayed at an epinephrine concentration of less than 1:800,000,000. In twenty-two minutes 0.836 mg. of epinephrine entered the blood stream; if all of it

10. Elliott, T. R.: The Action of Adrenalin, *J. Physiol.* 32: 401, 1903; The Control of the Suprarenal Glands by the Splanchnic Nerves, *ibid.* 44: 374, 1912.

11. Stewart and Rogoff, footnotes 7 and 8.

12. Stewart, G. N., and Rogoff, J. M.: The Proportion in Which Adrenalin Distributes Itself Between Corpuscles and Serum in Relation to the Technic of Testing for Epinephrine in Blood, *J. Pharmacol. & Exper. Therap.* 14: 79, 1917.

had been retained in the circulation there should have been an epinephrine concentration of nearly 1:1,000,000 in the arterial blood. Thus more than 99 per cent of the epinephrine disappeared from the blood in the systemic circulation during the injection.

Assay of specimens of blood collected simultaneously from the abdominal aorta and the vena cava during constant intravenous (external jugular vein) injection of epinephrine in amounts equal to from fifteen to thirty times the average normal quantity of adrenal secretion showed a loss of approximately half of the epinephrine from the arterial blood while it was passing to the venous side of the vascular system. A similar loss of epinephrine was observed in the blood coursing through the pulmonary circuit.

Unless it can be proved that there is an impairment in the capacity for removing epinephrine from the circulation in hypertension, it is highly improbable, in the light of these quantitative observations, that hypersecretion of epinephrine by the adrenals and presence of epinephrine in the systemic circulation in concentrations capable of producing a persistent elevation of blood pressure can be a cause of chronic hypertension. Such concentrations, if present, could be detected by our methods.

Reports in the literature alleging that epinephrine was detected in the systemic circulation in cases of various conditions may be said to have been based on improper use of methods or use of improper methods. Incredible concentrations have been reported; in some cases, simple arithmetical calculation would show the improbability, if not impossibility, of the existence of such epinephrine concentrations in the circulating blood. In 1931 Rogoff and Wasserman¹³ tested systemic blood from a small group of patients with hypertension (obtained through Dr. R. W. Scott at Cleveland City Hospital) and were unable to detect epinephrine. Stewart¹⁴ had previously reported similar negative results, using the same method.

A number of other investigators, working with satisfactory but less sensitive methods, failed to detect epinephrine in the systemic blood after the pressor effects of large doses had subsided. The mechanism whereby the epinephrine disappears from the blood is unknown; probabilities are oxidation, fixation or utilization by tissues on which it acts, elimination or a combination of these. Excretion by the kidneys has been suggested, but the alleged detection of epinephrine in urine is based on work with unreliable methods. Jackson¹⁵ found that the duration of the pressor effects of epinephrine is not altered by ligation of the renal blood vessels.

We performed experiments in which acute hypertension was produced by renal ischemia following firm application of Goldblatt's clamps and others in which it was produced by ligation of the renal arteries. Some of the dogs acquired acute uremia, especially those in which the renal arteries were ligated. In some but little hypertension developed, while in others there was considerable elevation of blood pressure. In none of the animals was the rate of secretion of epinephrine from the adrenals different from that ordinarily found in normal dogs. Goldblatt¹⁶ was able to produce chronic

hypertension by renal ischemia in dogs after excision of one adrenal and denervation of the other with mechanical destruction of its medulla. This type of hypertension, therefore, apparently is independent of the secretion of epinephrine from the adrenals.

COMMENT

Existing experimental and clinical evidence is inadequate to support the view that epinephrine secretion is an important factor in the etiology and pathology of chronic hypertension. With the possible exception of conditions arising from the presence of certain types of adrenal medullary neoplasms, the concept of hypersecretion of epinephrine as a cause of persistent elevation of the blood pressure is untenable. Our quantitative experiments contradict the suggestion that an "autogenous continuance" of secretion of epinephrine is possible.

The so-called emergency theory of adrenal function has furnished support to advocates of various ideas and practices in clinical medicine for a quarter of a century. The theory is attractive, but it has been contested severely on the ground that it is not based on unequivocal, quantitative, experimental premises. The present investigation adds to the evidence against the principles supported by this theory.

Serious consequences may arise from premature application of unproved theory to clinical practice. There is a growing tendency among clinicians to resort to surgical intervention at the adrenals or their nerves or to subject the adrenal region to roentgen irradiation in the treatment of hypertension. Damage to the adrenal blood vessels may lead to degeneration and atrophy of the indispensable adrenal cortex.¹⁷ It has been shown that adrenal operations for therapeutic purposes may lead to development of fatal Addison's disease.¹⁸

In some cases, irradiation of the hypophysis as well as of the adrenals is practiced. If it is assumed that an interrelated function between the hypophysis and the adrenal medulla is involved in such treatment, we may point out that hypophysectomy does not alter the rate of secretion of epinephrine from the adrenals.¹⁹ Page and Sweet²⁰ produced hypertension by renal ischemia in hypophysectomized dogs; when they performed hypophysectomy after producing hypertension the pressure declined. In 1935 one of us (J. M. R.) collaborated in a portion of the preliminary experiments by Dr. Harry Goldblatt on hypophysectomized dogs. It was found that hypophysectomy does not prevent development of hypertension due to renal ischemia. At any rate, we believe that the experimental basis for intervention at the hypophysis in the treatment of hypertension is even less substantial than intervention at the adrenals.

Our experiments lend no support to the possibility of an accumulation of epinephrine in the circulation in amounts capable of causing sustained elevation of blood pressure. The presence of such quantities of epinephrine in the circulation would produce effects, other

13. Rogoff, J. M., and Wasserman, P.: Unpublished data.
14. Stewart, G. N.: The Alleged Existence of Epinephrine in Pathological Sera, *J. Exper. Med.* **15**: 547, 1912.

15. Jackson, D. E.: The Prolonged Existence of Adrenalin in Blood, *Am. J. Physiol.* **23**: 226, 1909.

16. Goldblatt, Harry; Lynch, James; Hanzal, R. F., and Summerville, W. W.: The Production of Persistent Elevation of Systolic Blood Pressure by Means of Renal Ischemia, *J. Exper. Med.* **59**: 347 (March) 1934.

17. Rogoff, J. M.: Experimental Production of Chronic and Subacute Adrenal Insufficiency in Dogs and Cats, *Proc. Soc. Exper. Biol. & Med.* **29**: 1240 (June) 1932.

18. Rogoff, J. M.: Addison's Disease Following Adrenal Denervation in a Case of Diabetes Mellitus, *J. A. M. A.* **106**: 279 (Jan. 25) 1936. Snell, A. M.; Wilder, R. M., and Cragg, R. W.: Suprarenal Atrophy Following Denervation: Report of a Case with Findings at Necropsy, *J. Path. & Bact.* **43**: 473 (Nov.) 1936.

19. Rogoff, J. M.; Nixon, E. Nola; Stewart, George N., and Marcus, Emanuel: Epinephrine Secretion in Hypophysectomized Dogs, *Proc. Soc. Exper. Biol. & Med.* **37**: 715, 1938.

20. Page, I. H., and Sweet, J. E.: Extirpation of Pituitary Gland on Arterial Blood Pressure of Dogs with Experimental Hypertension, *Proc. Soc. Exper. Biol. & Med.* **34**: 260 (March) 1936.

than hypertension, which could not be tolerated for more than a relatively short period. We have shown that even large amounts of epinephrine introduced into the circulation disappear from the systemic blood very rapidly. Furthermore, we have demonstrated that an increased concentration of epinephrine in the systemic circulation does not produce a detectable increase in epinephrine secretion from the adrenals. Accordingly, the premise on which rests the theory that hypersecretion of epinephrine is a cause of hypertension is not supported by quantitative measurements of the rate of secretion of epinephrine.

The clinical significance of this investigation is obvious. In our opinion, these experiments support the conclusion that intervention at the adrenals as a method for treating hypertension does not have the support of unequivocal experimental studies. The practice is not without considerable risk to the patient; therefore such heroic measures ought to be deprecated. We agree entirely with the final statement made in an editorial published recently in *THE JOURNAL*²¹ that "the therapeutic hazard in a disorder should not exceed the disease hazard."

INCIDENCE AND CAUSES OF CHRONIC DYSPEPSIA AT VARIOUS AGES

AN ANALYSIS OF 4,223 CASES

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Turn on the radio, casually glance through advertisements in papers and periodicals or read the signs which are scattered everywhere along the highways, and it soon becomes evident how important symptoms of dyspepsia have become to the laity. All these advertising mediums give instructions on how to return to gastronomic happiness by easy and inexpensive means. In this paper we shall outline some of the more frequent causes of chronic dyspepsia and submit evidence pointing to the danger, particularly at certain ages, of the layman's attempting to cure himself by taking advertised therapeutic nostrums.

Physicians are in part responsible for this lamentable situation, because a diagnosis of "dyspepsia" is frequently made although, as is well known, this condition is not a disease but only a symptom. In the hope that certain symptoms are transitory and inconsequential, the physician sometimes advises easily available medications which have previously been found to be effective, and sometimes it turns out that serious disease has, because of the dilatory methods of diagnosis, been overlooked. Unfortunately, the severity of digestive disturbances is not necessarily an indication of the extent or gravity of the underlying cause, nor are pathologic processes giving rise to such symptoms limited to diseases of the stomach or duodenum or even to organs directly utilized and concerned in the process of digestion. A great variety of diseases may herald their approach or indicate their presence by causing disturbances in the smooth, rhythmic behavior of the processes of digestion.

MATERIAL FOR STUDY

To obtain the material for this study, 10,000 consecutive histories of patients aged 15 or older were scrutinized. In the first place we were interested in knowing how many of these patients complained of indigestion. If the complaints included symptoms of dyspepsia, the history was carefully analyzed in order to ascertain the causes of the complaint. A division of histories according to sex was then made and the causes of dyspepsia determined for each sex. We next proceeded to study the causes of dyspepsia in patients who presented themselves primarily because of this condition. Finally, because it is obvious that there must be some variation in the causes and the gravity of diseases responsible for dyspepsia at different ages, the histories were divided into three groups: the first for patients from 15 to 24 years of age, the second for patients from 25 to 39 and the third for patients of 40 and older.

INCIDENCE

A review of the histories in this series attests the fact that one of man's most frequent problems is related to his digestive unhappiness. More than 42 per cent of the patients included complained of dyspepsia, and about half of these presented themselves primarily because of dyspepsia. We were rather surprised to find that dyspepsia was slightly more common among men than among women. Of the 4,223 patients who volunteered the complaint of dyspepsia, 2,147 were males and 2,076 females. Of the male patients who included digestive disturbances among their complaints, 54 per cent came to the clinic primarily to seek aid for this complaint; only 41 per cent of the female patients with indigestion considered this their major ailment.

In chart 1 we have shown the incidence of dyspepsia at various ages for the 10,000 consecutive registrations included in this study. In clinic registrations we found proportionately less dyspepsia among persons less than 30 years of age. Between this age and 60 almost half of the total number of patients had some complaint of

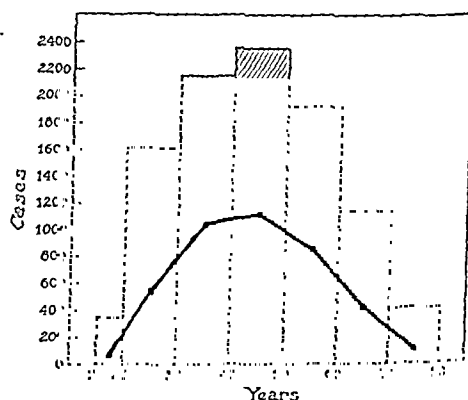


Chart 1.—Incidence of dyspepsia in 10,000 consecutive cases. The black line represents the number of patients with a complaint of dyspepsia and the shaded blocks the total registrations for each age group for the same period.

digestive difficulties. After 60 the relative proportion of patients who complained of indigestion to total registrations for similar ages diminished somewhat. This does not mean, however, that the gravity of the complaint was proportionately less for older persons. In fact, as might be expected, the causes for the dyspepsia were of relatively graver significance for patients beyond the age of 40 than for younger patients.

21. In Defense of the Adrenals, editorial, J. A. M. A. 106: 294 (Jan. 25) 1936.
From the Division of Medicine, the Mayo Clinic.

CLASSIFICATION

It would be confusing to enumerate separately all the heterogeneous maladies responsible for the dyspepsia in this series of 4,223 cases. We therefore intend to indicate the most common causes for the complaint in the various age groups and to list these and the less frequent causes according to the etiologic classification of dyspepsia suggested by Eusterman and Balfour.¹ They divided the causes of dyspepsia into four types: organic, reflex, systemic and functional. Under organic causes of dyspepsia we include diseases or anatomic anomalies involving the tissues of the stomach or duodenum. Among the reflex causes of dyspepsia we include diseases of the appendix, gallbladder, biliary ducts, pancreas or intestine and renal stone or other conditions which reflexly disturb the chemistry or mechanics of the stomach and duodenum. Among the dyspepsias of systemic origin we include those due to

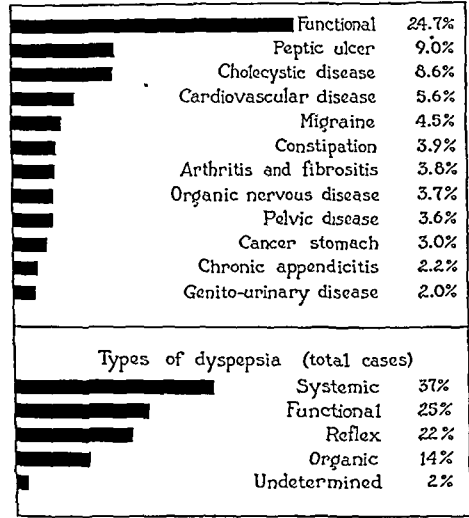


Chart 2.—The twelve most common causes of dyspepsia in order of frequency.

disturbances of metabolism, toxemia, deficiency diseases or dysfunction of the organs of internal secretion. Functional dyspepsias will be assumed to include the disturbances in normal gastroduodenal activity not resulting from demonstrable disease elsewhere in the body. Of this type are the various gastric neuroses, constitutional inadequacies and habit dyspepsias and the various dyspeptic manifestations of chronic nervous exhaustion.

CAUSES OF DYSPEPSIA IN THE SERIES OF 4,223 CONSECUTIVE CASES

A classification of the twelve most common causes of indigestion in order of frequency will be found in chart 2. These twelve causes account for 74.6 per cent of the total number of cases. The remaining causes, a long heterogeneous list, when added to these twelve result in a total incidence as follows: systemic dyspepsia 37 per cent, functional dyspepsia 25 per cent, reflex dyspepsia 22 per cent and organic dyspepsia 14 per cent. In 2 per cent of the cases no diagnosis could be made. Included are all instances of dyspepsia, regardless of whether the condition was the primary or an associated complaint. In a general way the causes of the dyspepsia as indicated in chart 2 are not greatly at

variance with those reported by Dwyer and Blackford² and by Davis and Vanderhoof.³

In chart 3 we have shown the ten most frequent causes of dyspepsia for both males and females. For each sex functional causes remain the most frequent, peptic ulcer being next in importance for the males and cholecystic diseases assuming the same position for the females. Cancer of the stomach was relatively

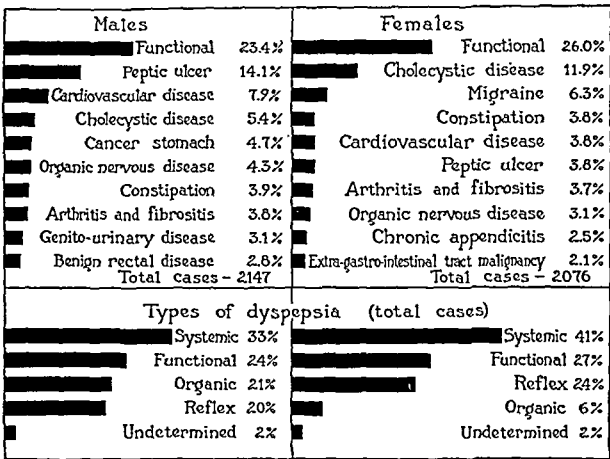


Chart 3.—The ten most frequent causes of dyspepsia according to sex.

important among the males. It is interesting to note that dyspepsia of organic origin was more than three times as frequent in the males as in the females.

Dyspepsia as a Primary Complaint.—The cases thus far considered have included all those of dyspepsia regardless of whether this complaint was considered as of primary or as of secondary importance. Many of the patients came to the clinic for other reasons and during the course of examination mentioned the fact that they also suffered from digestive disturbances. We thought that more accurate information regarding the important causes of dyspepsia could be obtained if we considered separately a group of patients who came to the clinic primarily because of dyspepsia. In chart

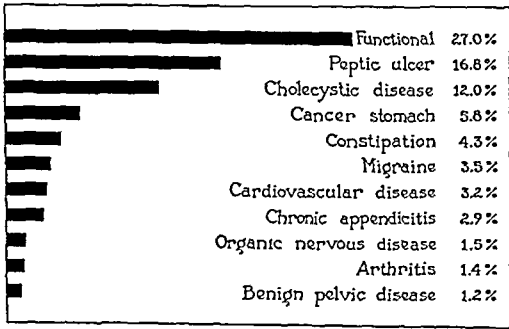


Chart 4.—Causes of dyspepsia in 2,045 cases in which the primary complaint was dyspepsia.

4 are outlined in order of frequency the causes of indigestion in this group, which included 2,045 patients.

The incidence of functional causes in this group was relatively high. Next in importance was peptic ulcer, which accounted for the dyspepsia of about one in six

1. Eusterman, G. B., and Balfour, D. C.: The Stomach and Duodenum, Philadelphia, W. B. Saunders Company, 1935, p. 111.

2. Dwyer, M. F., and Blackford, J. M.: Interpretation of Gastric Symptoms: A Clinical and Roentgenological Study of Three Thousand Cases, Radiology 14: 38-44 (Jan.) 1930.
3. Davis, T. D., and Vanderhoof, Douglas: A Study of the Causes of Indigestion Based on an Analysis of 4,000 Consecutive Cases, Virginia M. Monthly 53: 446-448 (Oct.) 1926.

of the total number of patients. About one in eight of the patients was found to harbor cholecystic disease. Of greater importance is the fact that carcinoma of the stomach was the fourth most frequent cause, and it will be remembered that the group includes patients of all ages. It is interesting to note that chronic appendicitis was considered to be the cause of the dyspepsia in only 2.9 per cent of the cases, or only half as frequently as cancer of the stomach.

Males		Females	
Functional	29%	Functional	38%
Chronic appendicitis	15%	Chronic appendicitis	16%
Peptic ulcer	12%	Migraine	10%
Migraine	7%	Organic nervous disease	5%
Constipation	3%	Cholecystic disease	3%
Ulcerative colitis	2%		
Types of dyspepsia (total cases)			
Organic	5%		
Reflex	26%		
Systemic	33%		
Functional	33%		
Undetermined	2%		

Chart 5.—Causes of dyspepsia in males and females aged from 15 to 24 with a primary complaint of dyspepsia.

Causes of Dyspepsia at Various Ages.—Although in a review comprising all ages it is of academic interest to know what the most common causes of indigestion are, it soon becomes apparent that there must be wide variation in the relative importance of the various causative diseases at different ages. Consider, for example, the incidence of cancer of the stomach. Only 3 per cent of the total of 4,223 dyspeptic patients were found to be suffering from this disease. Obviously the chance of finding cancer as the explanation for chronic dyspepsia in a man over 50 would be far in excess of this figure; actually it would be at least six times greater.

Similarly, functional disturbances which might account for the dyspepsia in a greater number of young patients could hardly be assumed to be of equal etiologic importance in patients beyond the age of 50. Some interesting and important data soon become evident when we review the various causes of dyspepsia at different ages.

Ages from 15 to 24.—In chart 5 are indicated the most frequent causes of dyspepsia in patients in this age group who came to the clinic primarily because of dyspepsia. The sexes are considered separately. A complete analysis was made of all the diseases responsible for indigestion in this group, and these were arranged according to the classification of dyspepsias outlined earlier.

We were rather interested to find the relative importance of functional types of indigestion among young patients whose symptoms of dyspepsia were sufficiently distressing to prompt them to seek relief at the clinic. Chronic appendicitis, although usually considered a disease frequently productive of chronic dyspepsia, was responsible for indigestion about half as frequently as were the functional types of dyspepsia. Peptic ulcer was found to be an important cause of dyspepsia among the males; it was unimportant among the females. Migraine was not an uncommon diagnosis for each sex. Cholecystic disease was of some importance in the causation of dyspepsia, especially among the young female patients.

In addition to the diseases indicated in chart 5 as being the most frequent causes of dyspepsia in this

group were many others, such as cardiospasm, nephritis, intestinal infestation with parasites, food allergy, terminal ileitis and, though rare, malignant process of the gastrointestinal tract. It is interesting to note that although these young patients came for examination primarily because of dyspepsia, in only one of twenty instances was the dyspepsia found to be caused by an organic disease of the stomach or duodenum. This is at great variance with the findings for patients of more mature age.

Ages from 25 to 39.—In chart 6 are listed the most frequent causes of dyspepsia in men and women between the ages of 25 and 39 whose primary complaint was indigestion. In this group functional disturbances were still of primary importance. There was only a slight predominance in regard to women. Next in importance for the men was peptic ulcer, which accounted for better than one in four of the cases in this group. The location of the ulcers is of some interest: Ninety-eight were in the duodenum and only one in the stomach. Peptic ulcer was only about a fourth as common among the women as among the men. Cholecystic disease was the cause of indigestion about twice as frequently as peptic ulcer among the women. In 5 per cent of the men the dyspepsia was assumed to be due to disease of the gallbladder.

Migraine and constipation were relatively common causes of dyspepsia. Chronic appendicitis was considered the etiologic factor less frequently among patients in this age group than in younger persons. Cancer of the stomach begins to appear as a causative factor for dyspepsia among the men of this age. Among the 750 women in this group there was no instance of carcinoma of the stomach and only one of cancer of the colon. This is rather significant when one considers the fact that of the men of this age who had indigestion sixteen were found to have cancer of the gastrointestinal tract.

Relatively important, though less common, among the causes of indigestion in the men were gastritis, diseases of the urinary system (especially disease of the kidney and ureteral stone) epilepsy, endocarditis

Males		Females	
Functional	37%	Functional	42%
Peptic ulcer	27%	Cholecystic disease	14%
Cholecystic disease	5%	Peptic ulcer	7%
Chronic appendicitis	3%	Migraine	6%
Constipation	3%	Constipation	5%
Migraine	3%	Chronic appendicitis	5%
Types of dyspepsia (total cases)			
Organic	11%		
Reflex	18%		
Systemic	36%		
Functional	34%		
Undetermined	1%		

Chart 6.—Causes of dyspepsia in men and women aged from 25 to 39 with a primary complaint of dyspepsia.

and rectal fissure or fistula. Among women the more frequent causes other than those listed were endocarditis, allergy, disease of bone, organic nervous disease (brain tumor and epilepsy), genitourinary disease and hyperthyroidism. General classification of the diseases responsible for the symptoms of dyspepsia in this group reveals the fact that organic disease of the stomach and duodenum was a cause of symptoms more than twice as frequently as in younger patients. Reflex disturbances were less frequent causes than in the

younger group; systemic diseases and functional disturbances accounted for the complaints in 36 and 34 per cent, respectively.

Patients of 40 and Older.—In chart 7 are listed the most frequent causes of dyspepsia in men and women of 40 and older who presented themselves for examination primarily because of dyspepsia. It soon becomes apparent when one considers the cause of dyspepsia in these patients that the condition must be considered as of grave importance. Whereas in the younger age groups functional disturbances were one of the principal causes of dyspepsia, they now begin to assume a role of decidedly less importance.

Approximately one in four of the women in this group was found to have cholecystic disease; peptic ulcer remained a disease of importance, and cancer of the gastrointestinal or the accessory gastrointestinal tract was found to account for the dyspepsia of 5.8 per cent of the women. Cardiovascular disease was a relatively frequent cause. Cancer of the stomach, although less frequently the cause of indigestion in the women than in the men of this age group, nevertheless

ulcer, cholecystitis or cancer of the gastrointestinal or the accessory gastrointestinal tract.

Classifying the causes of dyspepsia in patients of 40 or older who sought medical aid primarily because of indigestion, we find that in 32 per cent the dyspepsia was due to organic disease of the stomach or duodenum, in 28 per cent was a reflex type of indigestion, in 20 per cent was a functional type and in 18 per cent was due to systemic causes. In 2 per cent of the cases no diagnosis was possible. It is rather a significant fact that more than six times as many patients in this age group as in the group aged from 15 to 24 had organic disease of the stomach or duodenum as the cause of their dyspepsia.

SUMMARY

Dyspepsia is one of the most common of the unpleasant experiences to which man is heir. About half of 10,000 patients between the ages of 30 and 60 complained of varying degrees of digestive difficulties.

Chronic Appendicitis.—The causal relationship of the chronically inflamed appendix to recurring dyspepsia has been the subject of much controversy. As a cause of dyspepsia it was considered of importance in only 2.2 per cent of the 4,223 cases included in this series. Most of the patients were young; appendicitis was assumed to be the cause of the indigestion in 15 per cent of the young males between 15 and 24 and in 16 per cent of the females of the same age. In many the condition should probably more accurately have been classified as subacute appendicitis. There was a sharp drop in the incidence of this disease among patients between the ages of 25 and 39, the incidence for this group being 3 plus per cent for men and 4 plus per cent for women. In only 2 per cent of the women older than 39 who came to the clinic primarily because of indigestion was chronic appendicitis considered the cause of the complaint. In only seven of the 1,377 men of this age group did chronic dyspepsia seem explainable on the basis of chronic appendicitis. Though appendicitis may occasionally produce a periodically reappearing indigestion, it would seem to us that appendectomy for this cause after the age of 25 usually produces a therapeutic result disappointing equally to the patient and to the surgeon.

Functional Dyspepsia.—The stresses of life in this day and age exact quite a toll among those who choose to participate vigorously in its race. The resulting nervous and physical exhaustion, worry, depression and various psychic insults not infrequently produce changes in the normally smooth, rhythmic behavior of the chemical and motor mechanics of digestion, and the incident disturbances of function cause dyspepsia. It is not surprising that the highest incidence of functional disturbance in indigestion should occur between the ages of 25 and 39. Almost half of the women of this age who presented themselves primarily because of dyspepsia had dyspepsia of the functional type. The incidence of functional dyspepsia among the men of this age was also high, 37 per cent. Functional types of indigestion were also common among patients between the ages of 15 and 24; 29 per cent of the men and 38 per cent of the women were considered to have a functional type of indigestion. After the age of 40 the relative importance of functional dyspepsia became less, mainly because by this time more significant diseases had developed.

Peptic Ulcer.—This was second in frequency as a cause of dyspepsia among the 4,223 patients. Among men older than 39 who came for examination because

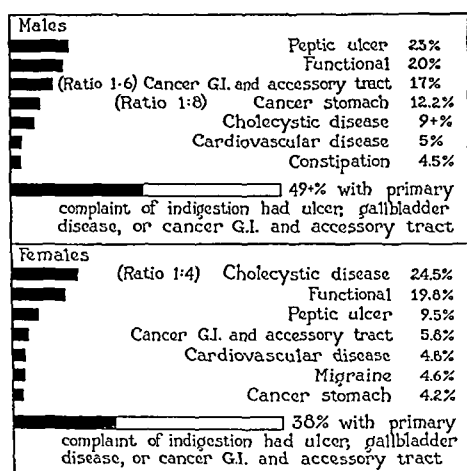


Chart 7.—Causes of dyspepsia in men and women of 40 or older who had a primary complaint of dyspepsia.

was a formidable etiologic factor. Another disease frequently responsible among the women was migraine. Appendicitis was considered responsible in only 2 per cent of the women. Hyperthyroidism, diaphragmatic hernia and pelvic diseases were other causes. Of the women in this group, therefore, 38 per cent had indigestion which was caused by diseases of the gallbladder, by peptic ulcer or by cancer of the gastrointestinal or the accessory gastrointestinal tract.

The most frequent cause of dyspepsia in the men of this group was peptic ulcer; functional indigestion was next. What seems to us to be of significance is the fact that one in six of all the men of 40 years or more who came to the clinic with the primary complaint of indigestion were found to have cancer of the gastrointestinal or the accessory gastrointestinal tract. One in eight of the men in this group was found to have cancer of the stomach. Cholecystic disease accounted for more than 9 per cent of indigestion in this group and cardiovascular disease for 5 per cent. Other frequent causes of dyspepsia were constipation, migraine, arthritis, syphilis, disease of the rectum, chronic alcoholism, cardiospasm and organic nervous disease. About half of the men of this group were found to have peptic

of indigestion it was the most frequent cause of dyspepsia. According to sex, peptic ulcer was four times as common among men as among women. The ulcers were predominantly duodenal. Gastric ulcer predominated among young males and among women beyond the age of 40; duodenal ulcer predominated in men between the ages of 25 and 40. Recurrent dyspepsia should always bring up for differential consideration the possibility of peptic ulcer.

Cholecystic Disease.—Disease of the gallbladder was one of the most common causes of dyspepsia. Among women it was surpassed in frequency only by functional disturbances. Among women past 39 it was the most common cause. There was less than half as much cholecystic disease among men as among women. Even among men, however, it was a frequent cause of indigestion, being fourth in order of frequency among the total number of patients comprising the series. One in eight of all women between the ages of 25 and 39 who presented themselves because of indigestion was found to have disease of the gallbladder. It was found to be the cause of indigestion in women older than 39 in about every fourth case. Although much less common among the causes of dyspepsia in young men and women, it was found to account for indigestion in 1.4 per cent of the males and in 3 per cent of the females.

Cancer.—Although not the most common among the causes of indigestion, cancer is certainly the most important. Failure to recognize cholecystic disease or peptic ulcer is a lamentable mistake; failure to recognize cancer is a fatal error. The incidence of cancer of the stomach in the 4,223 cases was 3 per cent. If we scrutinize these cases more carefully and consider the incidence of cancer of the stomach among patients whose salient complaint was dyspepsia, we find that the probability of the presence of this disease has almost doubled. If we then separate these cases further and consider the importance of cancer as a cause of indigestion among men of 40 or older who considered dyspepsia their major difficulty, we discover the startling fact that one in six had cancer of the gastrointestinal or the accessory gastrointestinal tract. One in eight actually had cancer of the stomach. Even men of this age who came for other causes but who also had some minor difficulties affecting their digestive tract were found to have cancer of the gastrointestinal or the accessory gastrointestinal tract in 4.8 per cent of cases. Cancer as a cause of the indigestion was relatively less common among the women. In the 4,223 cases there was no instance of gastric cancer among women less than 40 years of age. Above that age cancer of the stomach was found in 4.5 per cent of the women who came to the clinic because of dyspepsia, about a third as frequently as among the men.

CONCLUSIONS

Symptoms of chronic dyspepsia must always be evaluated carefully. All available methods of diagnosis should be utilized to obtain exact knowledge regarding its underlying cause. This is particularly important if the patient has reached the age of 40 years, when dyspepsia must be considered of grave significance until it is proved otherwise. Physicians seem to be especially dilatory and procrastinating regarding their own personal dyspeptic experiences, assuming some sort of professional immunity to gastrointestinal disease which may be very grave. This accounts for the fact that cancer of the stomach is detected no earlier among them than among their patients.

It would seem to us that the layman must be educated to realize the risk he takes when, with advancing age, he seeks relief for an ailing stomach by taking the advice of some radio announcer, drug clerk or other vendor of therapeutic nostrums.

THE CUTANEOUS HISTAMINE REACTION AS A TEST OF PERIPHERAL NERVE FUNCTION

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Histamine has come into use as a test for circulatory function in the extremities and as a drug of more general usage. Since the work of Sollmann and Pilcher,¹ Eppinger² and Hess³ and under the influence of the experimental work of Lewis,⁴ the drug has taken its place in several fields of medical practice. Its use as a test of circulatory function and as a stimulant of gastric secretion is too well known to need description.

The cutaneous reaction to histamine is a triple response consisting of (1) a purple spot at the site of the puncture; this is usually obscured quickly by (2) the formation of a wheal, (3) the later appearance of an extended area of arterial dilatation—the flare. The ultimate picture closely resembles a mosquito bite—a wheal surrounded by a flare of redness averaging from one-half to 2 inches (1.3 to 5 cm.) in diameter. It is in the flare that my interest centers.

Until 1927, when Sir Thomas Lewis⁴ published his monograph, a clear understanding of the physiology of the cutaneous histamine reaction was lacking. Much speculation and theory existed. Bruce⁵ in 1910 had observed that when the cutaneous nerve was degenerated no flare reaction was found. He postulated the presence of an "axon reflex" by which a stimulus would travel up one branch of a sensory nerve and down another branch to adjacent parts of the skin without utilizing a nerve cell in the entire reflex. His observations on the reactions of the conjunctiva to mustard oil apparently confirmed this view.

Müller⁶ in 1913 observed that the flare was absent in a number of injuries to the spinal cord, at a point corresponding to the site of the injury. He came to the conclusion that the flare was dependent on a spinal reflex arc, mediated through the pathway of the spinal cord as well as through the peripheral nerves. His views influenced others, notably Ebbecke⁷ and Krogh,⁸ who came to the same conclusion after similar experiences. These workers, including Müller, failed to take into account the probable injury to the nerve roots and ganglions in destructive lesions of the spine.

Lewis and his co-workers, dissatisfied with the current speculation on this subject, proceeded to investigate the phenomena. As a result of their work, certain facts were made clear:

1. The wheal develops as a local reaction to the irritant drug and is independent of the nerve supply.

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2. The flare is a local phenomenon which is not immediately abolished by regional anesthesia or by section of the peripheral nerve. It is of neural origin and depends on a purely local nervous reflex. The reflex is, however, dependent on the integrity of the peripheral sensory nerve. After section of the nerve, from six to eight days being allowed for degeneration to set in, the flare is no longer obtained. Section of the nerve at any point from the spinal ganglion to the skin will abolish the flare after sufficient time has elapsed to allow the nerve to degenerate.

These facts have not been utilized in actual practice. Neurologists in particular should have noted these experiments and adapted them to their needs. Here is a simple test, easy to interpret, requiring no laboratory equipment. While the interpretation is restricted to the integrity of the peripheral sensory nerves, by implication and deduction a wide field of usefulness is uncovered. Other than the cranial nerves, the peripheral nerves in the body are mixed nerves, carrying both motor and sensory fibers, so that the integrity of the nerve as a whole can be tested by determining the status of the sensory fibers.

TECHNIC OF TESTING

I have used histamine hydrochloride in 1:1,000 solution. The solution is kept in rubber stoppered vials and apparently does not deteriorate at room temperature over a period of months. Two methods of injection are used. In one I employ a tuberculin syringe and fine hypodermic needle. With this an amount as small as 0.01 cc. is sufficient when injected intradermally. The other method utilizes a spring punch device originally devised for obtaining a drop of blood for blood counts. The blade has been ground down so that only a fine puncture is made into the skin. The initial drop of blood is wiped away and a drop of histamine solution is deposited by contact over the puncture. This can be wiped away after contact of a few minutes.

The injections are made from 1 to 3 inches (2.5 to 7.5 cm.) apart across the area to be tested. By careful choice of sites a definite area can be outlined. In some cases only a single injection is necessary to confirm the clinical observations. In testing for segmental levels a single row of injections, about 1 inch apart, will suffice.

The test should be done quickly so that too much time does not elapse between the first and the last injection. One can then compare the various responses.

The reactions, for clinical purposes, are graded from 0 to 4 plus, according to the amount and intensity of the flare. A wheal with no flare is graded as zero (0). A wheal surrounded by an intense flare about the size of a half dollar (30 mm.) is graded 4 plus. Responses differ in certain parts of the body. Familiarity with the test increases the accuracy of the interpretations.

Variations in reaction are seen. Irregular or patchy flares are frequently seen in partly degenerated or in regenerated nerves after injury. The wheal should form within twenty seconds to one minute. The flare, which is the important factor in the test, appears later, reaches its height in from three to five minutes and begins to fade after from seven to ten minutes. Variations from the normal include delay or decrease in extent or time of reaction. This may be caused by: (a) partial degeneration of the peripheral nerve, (b) interference with the vascular supply of the area tested and (c) errors in technic of injection.

Tests should not be performed on those parts of the skin in which circulation is deficient. This applies not only to extremities with diseased blood vessels but also to the selection of sites at which the skin is normally under pressure, such as in the neighborhood of joints or over the malleoli.

During the past three years I have found the histamine test useful in a wide variety of cases. In many instances the test merely confirms conclusions made obvious by clinical observation. Occasionally it acts as a visible means of demonstrating conclusions to others who might otherwise remain unconvinced. In a few cases this test has been of extreme diagnostic importance.

The histamine test for peripheral nerve function has been found to be of value along the following lines:

1. To determine the presence of degeneration and later regeneration in peripheral nerves following injury. Traumatic lesions to nerves, sufficient in extent to interrupt the integrity of the peripheral nerve, will abolish the flare reaction after from six to eight days has elapsed. In my experience, the absence of flare frequently precedes the electrical reaction of degeneration by several days. Conversely, the flare begins to return in the area supplied by the regenerating nerve considerably earlier than the electrical reactions begin to change. In this way this technic is useful in determining the extent and duration of peripheral nerve injury.

2. To differentiate hysterical from organic anesthesia. Certain cases of hysterical anesthesia closely simulate organic anesthesia, and even the expert occasionally finds the problem perplexing. Not all physicians are skilled in this field, and the problem for the unskilled is not at all simple. The histamine reaction in which from six to eight days is allowed to elapse for degeneration is an effective test in this group of cases; particularly in medicolegal work, in which, following repeated examinations, anesthetics are frequently seen closely simulating the organic.

The test is also of value in those cases in which an actual organic anesthesia is present with a superimposed hysteria. In these cases, the sensory tests, being dependent on the cooperation of the patient, are frequently unreliable. The histamine test provides an accurate method of delimiting the true extent of anesthesia and is obviously independent of the patient's subjective response.

3. To differentiate the sensory anesthetics of malingering from the organic. The problem here is quite similar to that in hysteria. The neurologist of today is not infrequently asked to examine litigants who have been carefully coached and advised as to their symptoms. Complaints of anesthesia are not uncommon following injuries to the trunk and extremities. The histamine test demonstrates in a convincing manner the absence or presence of true dermal anesthesia.

4. As an additional aid in the localization of lesions of the spinal cord. In expanding lesions and in some compressing lesions of the spinal cord there is occasionally interference with the function of the ganglion of the posterior root. If two or more ganglia are involved, a segmental area of the skin at the upper level of the lesion will give a negative response to histamine. This has been demonstrated in one case presenting a tumor of the spinal cord and in several cases presenting fractured vertebrae with compression of the cord. Müller⁶ used the histamine test for this purpose as far back as 1913.

5. In the differentiation of nerve root from spinal cord involvement. This differentiation is particularly valuable in lesions of the lower part of the spine where it is necessary to distinguish between lesions of the cauda equina and lesions of the lower part of the spinal cord. The histamine test is negative (no flare) in the anesthetic area when the lesion involves the nerve roots but is normal if the anesthesia is the result of injury to the spinal cord.

6. To demonstrate to skeptical observers, laymen and the like, the presence or absence of anesthesia of peripheral nerve origin. When normal control areas are used the demonstration is very convincing, particularly in cases in which a negative reaction on one side can be compared with a positive reaction on the opposite side.

As a result of experience with the histamine reaction as a test of nerve function, I feel that the test is of more than passing value. I present nothing new in thus urging its use, for other observers have utilized the reaction in this manner in previous years. Their conclusions and reports have for the most part been found only in technical publications and have not been put to clinical use. A valuable addition to the armamentarium of the physician has thus been neglected. It is a reliable and simple procedure to test the function of peripheral nerves and, as such, should be more widely utilized.

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RECURRENT DIARRHEA DUE TO DYSENTERY ORGANISMS

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The frequency of persistent diarrhea, with or without a known history of a previous acute intestinal infection, stimulated me to investigate the etiologic factors associated with this symptom. With apparently negative results from examination of the stool, a fairly large percentage of patients yielded positive agglutinations in the blood serum for one or more of the organisms of the dysentery group in relatively high titers. Agglutinins have long been known to have an immunologic reaction in the patient's serum against the dysentery bacillus.

Davison¹ in 1920 studied a series of 134 cases of bacillary dysentery in children. He used the agglutination test in addition to bacteriologic methods for diagnosis and considered an agglutination of 1:50 or above an indication of previous or present dysentery infection. In infants he considered 1:20 as suggestive. He found that the maximum titer occurred from the seventeenth to the twenty-first day after the onset of the disease, and the agglutinins continued to be present for from four to six months. Three patients with diarrhea were negative culturally but gave positive agglutinations.

In the same year M'Leod and Ritchie² reported on the serum reaction in bacillary dysentery. Eighty-three

per cent of their patients from whose stools *B. dysenteriae* had been isolated gave positive results serologically; 100 normal persons gave negative results, and of 194 patients with diarrhea who gave negative results bacteriologically, 12.8 per cent showed positive agglutinations.

A study of bacillary dysentery in asylum patients was reported by Dawson and Moodie³ in the following year. Because agglutinations were present only after the fourth week of the disease, they considered the agglutination test of little diagnostic value in acute cases.

A few months later Gardner⁴ disproved the work of Dawson and Moodie. He stressed the importance of using standardized suspensions and of finding the normal limits of the antigen by testing it with a group of suspensions from normal persons or against a previously tested suspension.

In 1922 Patterson and Williams⁵ reported some observations on dysentery bacilli of the Sonne type and concluded that the agglutination test was extremely valuable in the diagnosis of chronic bacillary dysentery. They considered a titer of 1:80 or above as indicative of an etiologic connection.

Widowitz⁶ in 1923, after working on the agglutinations of dysentery bacilli in children, came to the conclusion that the formation of agglutinins is a definite indication of present or previous infection and that so-called normal agglutinins are remnants of real agglutinins.

Agglutination tests with Flexner dysentery bacilli were run on 161 blood specimens from tuberculosis suspects and on thirteen from normal persons. The results were reported by Hull and Henkes⁷ in 1923. The specimen from only one of the normal persons was faintly positive. They concluded that persons in the incipient stage of tuberculosis showed positive agglutination with the Flexner bacillus while those in the advanced stage did not react.

The Aberdeen epidemic of milk-borne bacillary dysentery was studied by Kinloch⁸ in 1923. By means of the agglutination test he was able to detect a carrier who had played an important role in the spread of the disease.

In 1923 Gardner,⁹ after working on the agglutination standard in bacillary dysentery, stated that one or more repetitions of the test at intervals of from three to four days was the best way to establish the presence of an infection.

Major Ash¹⁰ in 1923, in discussing the diagnosis of bacillary dysentery, stated that serologic studies should be done but are not very dependable.

In the next year Guimarães¹¹ worked on the sero-diagnosis of bacillary dysentery and got very favorable

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11. Guimarães, A.: Sero-diagnosis of Bacillary Dysentery, *Brasil-med.* 2: 15 (July 12) 1924; *abstr. J. A. M. A.* 83: 793 (Sept. 6) 1924.

Acknowledgment is made to Eli Lilly & Co. for their assistance and material in this research.

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results. He found it especially valuable in ruling out colitis and typhoid.

In 1924 Petrie¹² reported on the diagnosis of dysenteric infections in patients in mental hospitals. Although he believed that the agglutination test was inconsistent, he found it helpful in diagnosing chronic cases and in detecting carriers and thought it should be a routine procedure in such institutions.

Widowitz¹³ in 1924 reported some additional work on dysentery agglutination in children and found that the blood of even very young infants produces specific agglutinins. He stated that a positive reaction definitely proves a present or past infection.

In 1925 Hilliard¹⁴ reported a careful study of dysentery on patients in mental hospitals. He found that typhoid vaccine increased the agglutinating titer against the Flexner bacillus for about one month. He found the agglutination reaction well defined by the end of two months and persistent thereafter.

Fyre¹⁵ in 1927 investigated an epidemic of Sonne dysentery. He used the agglutination test in addition to cultural methods for diagnosis. He found no significant titer until after the first week.

In 1928 Menton¹⁶ after examining forty-seven specimens of blood, concluded that a negative agglutination reaction does not exclude bacillary dysentery and that isolation of the organism is essential in diagnosis.

The following year he reported a study of agglutinins to *B. dysenteriae* in apparently healthy persons.¹⁷ He made 524 tests, and thirty-three persons gave positive reactions. These thirty-three persons all came from crowded sections, and six of them gave histories of previous diarrhea.

Smith and Fraser¹⁸ in 1930 reported the results of agglutination reaction in relation to Sonne dysentery. They studied forty-eight patients with Sonne dysentery and 138 controls and found the test valuable in diagnosis. The percentage of positive reactions was highest after the fifteenth day of the disease.

In the same year de Lavergne, Melnotte and Debenedetti,¹⁹ after a careful study, concluded that the agglutination test was valuable even after many months and that the agglutination titer was always much lower in the control group.

Mackie²⁰ in 1932 reported that the agglutination test was sometimes helpful in differentiating chronic bacillary dysentery from chronic ulcerative colitis.

In 1934 Felsen and Osofsky²¹ studied an epidemic of Sonne dysentery and found that the agglutination test was valuable in diagnosing mild and symptomless attacks and in detecting carriers. They found that arthritis is frequently associated with the Sonne bacillus infection.

The following year Felsen and Osofsky²² reported some additional work on 300 control cases. By use of the agglutination test they discovered twenty cases of chronic bacillary dysentery which had been diagnosed as nonspecific ulcerative colitis; 23 per cent of their control group showed positive agglutinations.

Cases of acute and chronic bacillary dysentery were investigated by Felsen²³ in 1936. He found that long after the dysentery organisms disappear from the feces the intestinal lesions persist and the agglutination titer remains high. With Sonne dysentery, however, the titer may never have exceeded 1:50. Results of agglutination tests showed that many cases of nonspecific colitis had at first been bacillary dysentery.

In the same year Manson-Bahr²⁴ reported a careful study of the differential diagnosis of colon diseases. He found the agglutination test valuable in the chronic stages in order to differentiate it from colitis.

The clinical picture of this disease is bizarre. However, there is practically always a history of a previous acute diarrheal episode, which may have lasted from a few days to a few weeks. Then, for some unknown reason, periods of diarrhea recur from time to time and in some cases may even persist for months. If diarrhea persists long enough, the patient may show the usual signs of loss of weight and emaciation. Fecal examination of these persons may occasionally show some pus but rarely blood, unless there is an acute aspect to the condition. In a small percentage of examinations the etiologic organism may be recovered from the stool. Recently Silverman²⁵ of New Orleans devised a method of procuring more positive cultures from the stool by changing the intestinal flora from a proteolytic to an aciduric type.

Proctosigmoidoscopic examination, unless there is secondary infection, reveals no significant changes. The mucosa is blanched; the minute blood vessels stand out on the pale mucosa. Rarely, if ever, does one see ulcers; if they are present they are most likely small secondary lesions. Roentgenologically there are no pathognomonic signs. The haustral markings may be absent; there may be some tubalization of the descending colon and, in all cases, with barium enemas, not once was any unusual narrowing of the ileum noted similar to that found in regional ileocolitis. The most frequent complication of this disease is an arthritis, which may be monarticular in type, resembling an allergic joint, and as a complicating factor it was quite frequent in my group of cases. This is in agreement with the observations of Felsen.

Therefore the diagnosis of this condition must rest with the examination of the blood serum. A previous dysentery infection should be suspected in any patient who for some unknown reason has a persistent diarrhea that does not respond to ordinary methods of treatment after careful examination has ruled out the more common causes of diarrhea, particularly in view of the negative results on examination of the stool. Many patients date their trouble to the World War, and more recently there have been epidemics in Chicago resulting in subsequent outbreaks of paroxysmal diarrhea, which

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23. Felsen, Joseph: Acute and Chronic Bacillary Dysentery. *Am. J. Path.* 12:395-404 (May) 1936.

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have been faultily ascribed to many other etiologic factors than are herein presented.

Seven years ago, after a careful search for the causes of persistent diarrhea, I found a high agglutinin titer for the various organisms of the dysentery group. Since then I have seen approximately ninety cases in which the blood serum gave a relatively high agglutination for

TABLE 1.—Patients Entering with a History of Diarrhea

1. Diarrheas: 237 cases; 256 agglutinations; negative with all, 53									
	Negative	1:20	1:40	1:80	1:160	1:320	1:640	1:1,280	Total 1:80 or Above
Strong....	95	23	42	34	31	18	9	5	97
Sonne....	175	24	35	16	8	2	0	0	26
Shiga....	190	42	19	6	0	1	0	0	7
Hiss Y....	189	17	18	16	9	3	1	1	30
Flexner...	161	45	56	12	3	1	0	0	16
									176

one of the various organisms of this group. The interesting feature of this and subsequent studies, carried out at the Cook County Hospital, was that the Strong and Sonne bacilli were for the most part the causative organisms of the disease. Most laboratories in this community and elsewhere test for the Hiss Y, Shiga and Flexner bacilli and relatively few for the Strong and Sonne types. I am sure that this is the reason many cases remain undiagnosed.

In the technic followed, agglutinations in dilutions of 1:20, 1:40, 1:80, 1:160, 1:320, 1:640 and 1:1,280 were used, with a control tube for each. Each serum was run with Strong, Sonne, Shiga, Hiss Y and Flexner bacilli. Suspensions treated with solutions of formaldehyde, which are considered most reliable, were used and were tested at intervals of from one to two

TABLE 2.—Controls

2. Controls: 144 cases; 145 tests; negative with all, 29

	Negative	1:20	1:40	1:80	1:160	1:320	1:640	1:1,280	Total 1:80 or Above
Strong....	51	16	34	28	13	5	2	0	48
Sonne....	115	14	13	6	2	0	0	0	8
Shiga....	114	18	11	6	0	1	0	0	7
Hiss Y....	126	4	5	2	5	0	1	0	9
Flexner...	102	18	21	6	3	0	0	0	9
									81

weeks for purity and agglutinability against known antisera. All suspensions were made from smooth colonies. Sonne showed the greatest tendency to dissociate into rough variants and had to be transferred most often. Agglutinations were placed in an incubator at 35 C. (95 F.) for four hours and at room temperature for two hours before a reading was made. All readings were made with a magnifying lens.

From April 15 to Oct. 1, 1937, 237 cases of diarrhea were studied at the Cook County Hospital and 256 serial agglutinations were made, which consisted of the patient's serum tested against the Strong, Sonne, Shiga, Hiss Y and Flexner bacilli. In fifty-three of the 237 cases there were negative agglutinations (table 1). It might be said at the outset that agglutinations of 1:80 or above were considered diagnostic of a previous dysentery infection. Ninety-seven patients gave positive agglutinations of 1:80 and above for the Strong bacillus, twenty-six for Sonne, seven for Shiga, thirty for Hiss Y and sixteen for Flexner, making a total of 176 of these 237 patients positive for one of the various organisms of the dysentery group in dilutions of 1:80

or above. The Strong bacillus was by far the most prominent organism of the group to give a high titer of agglutinins.

Table 2 illustrates the studies of 144 patients selected at random who came to the hospital for other than diarrheal conditions. This group of cases was selected to see whether relatively high titers could be obtained in patients who had no recollection of a previous dysentery infection or who associated their diarrhea with an ordinary gastrointestinal upset. Of these 144 cases, twenty-nine were negative for all organisms and eighty-one gave a positive agglutination of 1:80 or above for the various organisms. These are further subdivided into forty-eight for Strong, eight for Sonne, seven for Shiga, nine for Hiss Y and nine for Flexner. In the diarrheal conditions the percentage of positive agglutinations in the blood was 79; in the control cases the percentage was 56. It is difficult in the control series to go into the history of all the patients because they were scattered throughout the hospital and many were

TABLE 3.—Cultures

Cultures Taken from 133 Patients	
Negative.....	111
Positive.....	22 (16 per cent)
Strong.....	11 (50 per cent)
Shiga.....	0
Sonne.....	6 (27 per cent)
Flexner.....	5 (22 per cent)
Hiss Y.....	0

in the outpatient clinic. However, it is reasonable to suppose that these eighty-one patients who gave a positive agglutination must have been exposed at some time or other to dysentery, if any credence is to be placed in the specificity of the agglutinations for these organisms. There is enough evidence in the literature and in the currently described work to support this contention.

As indicated in table 3, 133 of the patients with diarrhea had cultures of their stools made as a routine by the ordinary methods for obtaining positive dysenteric cultures; 111 of them gave negative reactions; twenty-two, or 16 per cent, gave positive reactions. Of the twenty-two, eleven, or 50 per cent, gave positive agglutinations for Strong; six, or 27 per cent, for Sonne, and five, or 22 per cent, for Flexner. No Shiga or Hiss Y bacilli were recovered in any of the positive stools.

TABLE 4.—Office Patients with History of Diarrhea:
Total 104 Patients

Total positive, 45 cases									Total 1:80 or Above
	1:20	1:40	1:80	1:160	1:320	1:640	1:1,280		
Strong.....	0	3	7	8	7	9	1		22
Sonne.....	1	0	1	2	0	1	0		4
Shiga.....	0	3	0	1	1	0	0		2
Hiss Y.....	0	1	6	7	3	0	0		16
Flexner.....	1	1	5	1	1	2	0		9
									67

Table 4 shows that from March 2, 1937, to April 1, 1938, 104 consecutive patients complaining of diarrhea were tested at my office. Forty-five of them gave positive agglutinations for one or more organisms of the dysentery group. Previously the agglutination tests had been done by outside laboratories, which accounts for the lack of control data for the other reported forty-five cases. Of the 104 patients who presented them-

selves for diarrhea, approximately 45 per cent had positive agglutinations. In table 4, thirty-two of these patients gave agglutinations of 1:80 or above for the Strong, four for the Sonne, two for the Shiga, sixteen for the Hiss Y and nine for the Flexner. Of these forty-five total positive cases, therefore, there were sixty-three agglutinations of 1:80 or above for the various organisms of the dysentery group. It is interesting to note that seventeen of the thirty-two agglutinations for the Strong type were 320 or above and that the others had correspondingly high titers.

COMMENT

Many patients complained of having had diarrhea for a period of years and gave negative results in the stool. The importance of making routine examinations of their serums is self evident. The data herein presented are suggestive that *B. dysenteriae* may infect a patient and later lead to recurrent diarrhea. The modus operandi of the clinical picture may be related to an allergic manifestation in which a sensitized intestine reacts to the antigen of the organism. The paroxysmal attack may resemble other bacterial allergic phases or it may resemble Shwartzman's phenomenon. The infrequency of the presence of the organism in the stool of the patient may suggest localization in the intestinal wall or, more logically, in the regional lymph glands. The cycle of the diarrhea is interdependent on the ability of the host to counteract the offending organism or its toxins. Further studies will have to be carried out to substantiate this point of view. The interesting feature is that, in a small group of control patients, after adequate therapeutic approach, the titer of agglutinins disappeared from the blood serum on subsequent examination. It should also prove enlightening to observe untreated patients during a quiescent period, to see whether the agglutinating titer remains as high or is absent when the diarrhea is in complete abeyance. This feature of the clinical picture is in the process of elaboration. I think it is justifiable to conclude that the bacillus of dysentery may infect a patient, the acute picture may subside and subsequent paroxysmal diarrhea may owe its origin to a previous infection based on the evidence of high agglutinating titer in the blood and in the absence of positive changes in the stool.

Except in relatively few cases, no attempt at a therapeutic regimen was carried out on any of the patients at the Cook County Hospital. However, those in my private service were subjected to the following therapy:

If the patient was critically ill, and occasionally he became so, he was hospitalized, placed on a high vitamin nonresidue diet and, if he showed no previous sensitizations, he was given a polyvalent antidysentery serum, beginning with 10 cc. the first day, 20 cc. the second day, 30 cc. the third day, 40 cc. the fourth day and 50 cc. on each of the fifth and sixth days. Following this program some serum sickness usually developed, which could be controlled by the ordinary methods. After the serum therapy the patient was given gradually increasing doses of a polyvalent or monovalent vaccine, depending on the specificity of the titer of the agglutinins in the blood. If the patient was ambulatory no serum was usually given, but he was started out immediately on a high vitamin nonresidue diet and given gradually increasing doses of the vaccine.

For specific treatment other than serum therapy, two types of stock vaccine were employed, one for oral and the other for hypodermic use. These were in polyvalent mixtures as well as in single strains. However, because of increased local and general toxic reactions, the Shiga

organism was not used in the polyvalent mixtures. The oral vaccine contained 50 billion organisms per capsule; the hypodermic solution contained one billion organisms per cubic centimeter.

Patients receiving the oral vaccine took one capsule daily, half an hour before breakfast. If symptoms in the intestine were increased the dose was immediately reduced or the hypodermic vaccine given, since with the latter the dosage could be controlled more easily. With a decrease in symptoms in the intestine after from two to four weeks, the oral vaccine was given every second or third day and gradually decreased to one capsule weekly, provided the patient remained free from symptoms. The oral method was tried out because of the experience of some Russian investigators,²⁶ but in our hands it was not very effective.

The hypodermic vaccine was started at 0.1 cc. dose, subsequent doses being increased by that amount, unless a local or systemic reaction occurred, whereupon the dosage was either maintained or decreased. The schedule producing the best results is as follows:

Three injections a week for three weeks.

Two injections a week for three weeks.

One injection a week for six weeks.

One injection every two weeks for several months until the symptoms are in complete abeyance.

Variations, however, occur with the difference in the needs of the individual. In general the hypodermic vaccine gave better results.

The therapeutic results in these cases may be open to some question because one might possibly feel that one is dealing with nothing more than a reaction to a foreign protein injected into a patient. I have no proof to offer for the specificity of this form of treatment. Certainly further controls will have to be made in order to substantiate whether or not this is a specific reaction. I might say that in several of these cases, previous to the use of these vaccines, Borgen's vaccine filtrate and Borgen's immune serum gave no results in the few cases in which they were tried, and the patients did respond to the dysentery vaccine. Therefore I am merely offering this evidence as an observation on my part in order to be of some assistance in the treatment of these cases of unexplained diarrhea.

CONCLUSIONS

1. Recurrent diarrheas may be due to dysentery organisms.

2. Patients may become infected with bacillary dysentery organisms and later show agglutinins in the blood serum for the offending organism. These agglutinins remain for a long period of time.

3. Arthritis may be a complication of this form of dysentery.

4. In a relatively small number of cases the organism may be recovered from the stool.

5. Diarrhea associated with this phenomenon may be controlled by gradually increasing doses of monovalent and polyvalent vaccine given hypodermically.

6. In acutely prostrated individuals, monovalent and polyvalent antidysentery serum may be of value.

7. Further observations must be made before one can arrive at conclusions regarding the specificity of this form of treatment.

104 South Michigan Avenue.

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AIR CONDITIONING AND INDUSTRIAL HEALTH

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The practical application of scientific air conditioning to various industrial processes and manufacturing methods and equipment first became evident about 1905. Air conditioning for human comfort was provided originally about 1922 in motion picture theaters and during the last ten or fifteen years has been made available with gratifying results in restaurants, stores, hotels, private homes, office buildings and railroad cars. Air conditioning may be defined as the mechanical production of an artificial indoor atmosphere through the simultaneous and complete control of temperature, humidity, movement and purity during various seasons of the year. While proper ventilation in general is recognized as one of the essentials for the maintenance of indoor life and health, little scientific information or statistical data are available as to the influence of complete air conditioning on the health of industrial workers.

AIR CONDITIONING SYSTEMS

There are various types of so-called air conditioning systems now in vogue. "Air conditioning" is a loosely used term which may mean one thing from the point of view of one person and an entirely different thing from the point of view of another; in fact, the words "air conditioning" and "air conditioned" are often misused. The popularity of the idea and the appeal to comfort, particularly the cooling effects in hot weather, already have given rise to a number of different devices now on the market. A true air conditioning system in the accepted use of the term is one that will provide simultaneously the exact indoor air temperature, moisture content, movement and purity required for a particular purpose, despite outside weather conditions; it must make available a complete rather than a partial conditioning.

As a rule a system designed to give simultaneous and complete air conditioning in a large building draws outside air to a centrally located conditioning apparatus in the building, where it is brought into contact with a dense water mist. The temperature of this water mist is automatically controlled either by heating or by cooling and in this manner the moisture content of the air passing through it is controlled. The water spray also serves as a filter to remove impurities such as dust particles and soluble matter. As the air leaves the spray chamber it may be heated or cooled to the desired degree of temperature according to the season of the year, and it is then carried through ducts and distributed to various rooms. In the winter months artificial heat and increased humidity are required, while during the hot and humid summer months the conditioning not only must cool the indoor air through some form of refrigeration but also must dehumidify it. In the conditioning process the volume of air circulated also is automatically regulated and controlled.

PREVIOUS STUDIES

One of the leading air conditioning companies has deplored the amazing lack of authoritative information regarding the effects of air conditioning on human health and has invited medical research and investigation on the subject; in spite of this, little controlled scientific data of value are available. Up to the present,

most of the studies have been directed toward determinations of comfort effects, while a few comprehensive investigations on physiologic reactions have been carried on by various research workers representing such agencies as the American Society of Heating and Ventilating Engineers and the United States Public Health Service and Bureau of Mines.

SPECIAL STUDY

I had the opportunity to observe the results of air conditioning on the health of a particular group of industrial workers for a period of approximately three years. The system involved was one of the nationally recognized and approved complete air conditioning systems. The operating schedule of this air conditioning system was varied somewhat from time to time on a more or less experimental basis from the standpoints of comfort, effect on equipment, local weather conditions, season of the year, and current maintenance costs.

METHODS

In considering the possible effects of air conditioning on health, the difficulty in obtaining conclusive data must be recognized at the outset. Two approaches to a study of this nature are possible:

1. The positive approach, in which an attempt is made to measure the actual improvement in health and physiologic reactions based on careful periodic medical examinations, and studies of weight, nutrition, blood conditions, freedom from sickness and other factors relating to the positive health of each individual in the group.
2. The negative approach, in which an attempt is made to measure the amount, character and duration of sickness among members of an air conditioned group, as compared with a simultaneous control group not working in specially conditioned air.

In the study reported on, the positive approach would have involved considerable expense and a very close check-up on a large number of individuals, with possible disruption of routine service, as well as a hindrance caused by many variables which naturally would enter into such a study unless each individual in the group could be carefully controlled not only during hours of work but also during the entire twenty-four hours of each day. This investigation, therefore, is based on an analysis of the sickness experience of a group, compared with a suitable control group, as outlined under the negative approach mentioned.

GROUPS SELECTED

Approximately 1,000 female employees working in three or four air conditioned rooms in the same building were selected as the demonstration or study group, including only those having had at least two years of service at the beginning of the study and, so far as practicable, having had the same type of work during that time.

A control group of approximately the same number of women employees of about the same average age carrying on the same type of work in several other rooms of the same or nearby buildings under practically the same conditions, with the exception that they were working under ordinary conditions either of mechanical or of natural ventilation and not in so-called air conditioned space, was chosen for comparative study as to their sickness experience. The number of employees in each of the groups decreased somewhat and changed proportionately as the study progressed,

as the result of resignations, furloughs, change of place of work and other factors in connection with employment; therefore the sickness incidence rates, based on a slightly decreasing number of employees each month, have been computed and studied from the standpoint of number of cases per hundred employees.

STATISTICAL DATA

Two types of statistical data were available for this study, as follows: (a) those including cases of minor incidental sickness absence of seven days and less and (b) those based solely on cases of more serious illness lasting over seven days. Because of the fact that the number of cases of minor incidental absence of seven days and less may be subject to considerable distortion by unverified personal reasons for absence, and that many actual cases of brief illness may be recorded without a physician's diagnosis or certificate, it was decided to base this study on cases of sickness lasting more than seven days, all of which were reported and recorded on the basis of a physician's examination and diagnosis and were not liable to the influence of personal, employment and economic factors.

RESULTS

Table 1 gives a comparison of the average monthly incidence per hundred women employees of cases of sickness for periods lasting over seven days during thirty-three months of study in air conditioned and non-air conditioned groups.

TABLE 1.—Comparison of Average Monthly Incidence Rates of Cases of Sickness During Thirty-Three Months of Study

Group	Cases per 100 Employees	
	General Causes	Upper Respiratory Diseases
Air conditioned.....	1.62	0.72
Non-air conditioned.....	1.39	0.67

Table 2 gives a comparison of average days' duration per case of sickness for periods lasting over seven days, in air conditioned and non-air conditioned groups.

TABLE 2.—Comparison of Average Days' Duration per Case of Sickness During Thirty-Three Months of Study

Group	Average Days per Case	
	General Causes	Upper Respiratory Diseases
Air conditioned.....	41.5	29.7
Non-air conditioned.....	41.4	29.5

GENERAL COMMENTS

From this study there is no evidence to indicate any improvement in incidence or duration of sickness among a group of upward of 1,000 people working in scientifically controlled air conditioned space as compared with a control group of approximately the same size working in non-air conditioned quarters ventilated by the usual mechanical and natural methods.

The somewhat negative results in this comparative study may be based not so much on the lack of influence of air conditioning on absence because of sickness as on the satisfactory quality of the ventilation in this particular instance available to the control, non-air conditioned group. A study involving the comparison of scientific air conditioning with a wholly

inadequate method or outworn system of ventilation obviously would show more definite results favorable to air conditioning in contributing to the reduction of the incidence and duration of sickness.

195 Broadway.

WEIL'S DISEASE

REPORT OF A CASE IN A FISH WORKER

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The following case of leptospirosis icterohaemorrhagica (Weil's disease) is being reported because of its infrequency in this country and because of its possible implications with respect to its status as a compensable occupational disease.

REPORT OF CASE

J. S., a married white man, aged 33, a fish cutter, became ill Oct. 2, 1937. His previous history was negative and his family history was negative apart from the fact that his father has an inoperable carcinoma of the rectum. The present illness began with a sudden onset of chilly sensations, fever between 103 and 104 F., aches all over the body and a slight cough. He also complained of a severe frontal headache. The headache and generalized pains persisted for four days, accompanied by chilliness and a subsiding temperature, which reached normal on the fifth day. On the second day of illness he began to complain of abdominal cramping and nausea, followed by persistent vomiting. There was marked constipation and abdominal distention. Two days later a yellow discoloration of the sclera became apparent; the urine was dark and the stools were light.

The patient was first seen on the seventh day of illness, at which time examination revealed that he was acutely ill, almost moribund, stuporous and delirious and hiccuping continually. Jaundice was intense. Scratch marks and purpuric spots were visible all over the body. The conjunctivae were markedly injected. Deep scleral icterus was present, with a moderate degree of photophobia. The pupils were equal and regular and reacted to light. The ears and nose were normal, the tongue was coated and the pharynx was moderately congested. The gums were spongy and bled easily. Extensive hemorrhagic herpes labialis was present. Examination of the heart was essentially negative except for a bradycardia of 60 per minute. Wheezes and rhonchi were heard in the right lung posteriorly. The liver was palpable one fingerbreadth below the right costal margin and was tender; the spleen was not felt. The abdomen was distended, and spasm of the right upper rectus muscle was present.

October 9, the eighth day of illness, the patient on several occasions vomited a coffee ground material. The temperature was normal at this time. Dextrose was given parenterally. Two days later he was admitted to Kings County Hospital, where he remained only one day, refusing all treatment until he was taken home. At home the patient continued to vomit for two days more, and hiccuping continued until October 15. Dextrose was continued by mouth and intravenously, with insulin subcutaneously and liver extract intramuscularly. The patient began to improve, although a secondary rise in temperature began on the fourteenth day of illness and persisted for six days. October 23, the twenty-first day of illness, there was a recurrence of marked conjunctivitis in the left eye, which subsided after a few days. The patient made a complete recovery. The results of the laboratory examination of the blood are given in the accompanying table.

The urine October 11 contained albumin 1 plus, bile 4 plus, occasional granular casts and no leucine or tyrosine. Dark-field examinations of the urine for *Leptospira* were repeatedly negative.

Intraperitoneal inoculation of guinea pigs with urine on the fourteenth day failed to produce the characteristic disease in

these animals. Blood was sent to the Public Health Service in Washington, D. C., on the twentieth and thirty-eighth days of illness respectively, and both specimens showed positive agglutination in dilutions up to 1 in 30,000.

COMMENT

It is interesting to note that this patient, when first seen, was considered to have acute yellow atrophy of the liver until examination of the blood revealed a severe azotemia. Since these observations could not be correlated with that diagnosis, Weil's disease was considered and confirmatory evidence was obtained. Further questioning of the patient elicited the fact that he worked in a fish market that was infested with rats which frequently came in contact with fish handled by him. In Aberdeen, a recent report² of the disease in forty fish workers calls attention to the great frequency of the disease in this occupation, to the extent that the diagnosis of "fish worker's disease" is often made by the patient. Transmission of the disease

Laboratory Observations of the Blood

	October 11	October 16	November 9
van den Bergh.....	Immediate positive	...	...
Sugar.....	106	...	...
Urea.....	180	72	...
Urea nitrogen.....	...	...	8.5
Creatinine.....	4.2	2.0	...
Cholesterol.....	...	310	...
Ester.....	...	210	...
Per cent of cholesterol as ester.....	...	68	...
Icteric index.....	150	86	19.2
Bilirubin.....	18 mg.	...	...

through the urine of infected rats has been proved by Ido² and later workers, who also examined the kidneys of rats in various parts of the world. In general it has been estimated that approximately 10 per cent of rats all over the world carry *Leptospira* in the tubules of the kidney without themselves showing symptoms, and excrete the organism in the urine. Infection in human beings usually occurs through breaks in the skin, but it has also been successfully demonstrated that, in guinea pigs, the disease may be reproduced by application of infected urine to the unbroken skin.³

Inada⁴ divided the clinical courses of the disease into three stages:

1. The febrile stage lasts six or seven days and is initiated by a chill or high fever, accompanied by intestinal disturbances, headache, cramping muscular pains particularly in the gastrocnemius muscles, conjunctivitis and prostration. The urine contains albumin and casts. Cough, sore throat and vomiting are frequent. Hemorrhagic herpes labialis may occur. Leukocytosis between 10,000 and 20,000 and azotemia are usually present. Death rarely occurs during this stage. *Leptospira* is found in the blood at this time, so that inoculation of guinea pigs with blood will induce the typical reaction. It is not, as a rule, possible to demonstrate the organisms in the urine or to find antibodies in the blood during the first stage.

2. The stage of icterus begins on the seventh or eighth day and extends for five or six days. Jaundice, hemorrhagic tendencies, prostration, and nervousness and cardiac symptoms appear. Evidences of bleeding

may be seen in all organs. Icterus occurs in only 60 per cent of cases. The liver is usually enlarged, the spleen only rarely. Azotemia becomes more marked, the blood urea ranging from 50 to 397 mg., and death from uremia may occur. The blood is free of organisms during this stage, but they can easily be found in the urine, where they may persist for forty days. The blood contains antibodies.

3. The convalescent stage begins on the thirteenth or fourteenth day. Improvement progresses with decrease in icterus and in the azotemia. Loss of hair occasionally occurs. Antibody production in the blood is complete; *Leptospira* is present in the urine, which may also contain antibodies. A secondary rise in temperature, the so-called after fever, occurs in from 28 to 40 per cent of the attacks, lasting from five to fourteen days, and may be accompanied by a secondary rise in blood urea as well.

The pathologic lesions involve primarily the liver, kidneys, skeletal muscles and capillaries. In the liver, proliferation and granular degeneration of hepatic cells, biliary stasis and periductal interstitial cellular infiltration are commonly found, with occasional areas of focal necrosis. The kidneys show swelling, granular degeneration and polyblastic invasion of the tubules and interstices, with subcapsular and interstitial hemorrhages. The skeletal muscles present punctate hemorrhages, hyaline degeneration and necrosis of the fibers. Vacuolization, loss of striations and infiltrations with cells are common. Capillary damage is indicated by minute hemorrhages, which occur in all tissues of the body.

Active immunization has been carried out in man, with an effect lasting from six to twelve months. Serum produced from horses and goats is being used therapeutically in Europe and Japan with good results if administered before the appearance of jaundice, but because of the infrequency of the disease in this country serum is not yet available here.

At the time this case was first seen, the American literature contained only twelve proved cases of Weil's disease. In the past few months, two further reports have appeared, bringing the total number of cases to twenty. This case is therefore the twenty-first to be reported in the United States and the second case found in a fish cutter. In view of the common incidence of the disease in fish workers in other countries, the question of its inclusion in the list of compensable diseases must be considered. That the disease is an occupational hazard cannot be denied, occurring as it does in all types of work in which the individual is exposed to contact with rat excreta. This question has already been raised in England. While it has not yet been declared compensable, a legal precedent was established there in 1925, when compensation was awarded for the death from Weil's disease of a coal worker, and the award upheld following an appeal (*Raeburn v. Lochgelly Iron and Coal Co., Ltd.*, 20 B. W. C. C., 637).⁵ May 17, 1935, the widow of a sewer worker in England was awarded almost \$3,000 for the death of her husband from this disease.⁶ It is therefore apparent that the disease is an occupational hazard and, as such, individuals who have contracted the disease in the course of their occupation should be awarded compensation.

1. Davidson, L. S. P., and Smith, J.: *Quart. J. Med.* 5: 263 (April) 1936.

2. Ido, Y.; Heki, R.; Ito, H., and Wani, H.: *J. Exper. Med.* 26: 341 (Sept.) 1917.

3. Inada, R., and others: *J. Exper. Med.* 23: 377 (March) 1916.

4. Inada, R.: *J. Exper. Med.* 26: 355 (Sept.) 1917.

5. Smith, H. E., communication to the editor: *Brit. M. J.* 1: 39 (Jan. 5) 1935.

6. Compensation for Weil's Disease, editorial, *Brit. M. J.* 1: 171 (May 25) 1935.

In New York City, as a harbor city, with its exposure to rat infestation, it is remarkable that many more cases have not been seen. It is possible that cases have occurred and have been overlooked. Our patient tells us of another individual working in the same market who has had jaundice recently. An extensive investigation should be pursued to determine the epidemiologic potentialities of the disease in this city, with an attempt at preventive measures.

SUMMARY

1. A case of leptospirosis icterohaemorrhagica occurred in a fish worker in New York City.

2. The question of its inclusion in the list of compensable diseases has been raised and precedents have been cited from the English courts.

3. The disease should be considered in the differential diagnosis of jaundice, especially in a waterfront city such as New York where rat infestation is present.

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IDIOSYNCRASY TO PARALDEHYDE

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During the past few years many new methods have been introduced for the relief of pain during labor, their introduction being based on the belief (in which we concur) that analgesia and anesthesia should form just as necessary and as important a part in the proper management of obstetric cases as they do in surgical cases. However, any method used for the purpose must be carefully considered as to its relative efficiency and safety for both mother and child.

We have found that paraldehyde is an efficient obstetric analgesia-amnesia producing agent with a low toxicity and that when failures have occurred they have usually been due to insufficient dosage or improper technic. Toxic effects have rarely occurred, and these have appeared when the patient had an idiosyncrasy to the drug.

In the fatal case reported in this paper there was unusual susceptibility to paraldehyde. The hypersusceptibility was regarded as being probably produced by a pathologic condition in the patient, which was not discovered until necropsy, in this instance death occurring after 31 cc. of paraldehyde was given by rectum as a single dose in the beginning of labor.

Idiosyncrasy to drugs, a condition which may be defined as a susceptibility peculiar to the individual, usually consists in a hypersusceptibility in which (1) the ordinary action or (2) inconspicuous side actions of the drugs are greatly enhanced.

Many theories have been advanced to explain each form of idiosyncrasy, but as yet not one of them can be said to be universally accepted. The one which is probably regarded by pharmacologists as the most tenable is that idiosyncrasy is due to chemico-anatomic differences in certain organs of the sensitive person which, when the structures are acted on by drugs, give rise to abnormal functions.

TOXICOLOGY OF PARALDEHYDE

Before presenting the history of our case and the conditions found at necropsy, we shall discuss briefly the toxicologic aspects of paraldehyde in order to show that the dose used in our case would not have been excessive under ordinary conditions.

Toxicologists, pharmacologists and clinicians who have used the drug for sedation other than as a soporific consider paraldehyde to be a relatively nontoxic substance.

Underhill¹ stated that the toxicity of paraldehyde is low, that poisoning is rare and that the taking of as much as 100 Gm.² has been followed by recovery.

Leschke³ searched the literature and could find only a few fatal cases of poisoning with paraldehyde. In one case, death followed the ingestion of 25 Gm., in another 52 Gm., the first apparently being the O'Brien case, in which death occurred four hours after the administration of from 22.5 to 26 cc. when the patient was delirious with typhoid. He further states that patients have recovered from as much as 150 Gm. Leschke reports a case in which recovery occurred promptly after 30 Gm. of paraldehyde, 3.2 Gm. of cyclohexenyl ethyl barbituric acid (phanodorn) and 0.4 Gm. of morphine.

Sollmann,⁴ like other pharmacologists, states that the toxicity of paraldehyde is low and that 100 Gm. produced only very prolonged sleep. He considers that as a hypnotic in severe cases of insomnia the dose may be raised to 5-15 cc.

Cushny⁵ apparently considered that the fatal poisonings reported in the literature were not altogether due to paraldehyde and hence stated that "very large quantities have been taken without fatal results and in fact without any more serious consequences than prolonged unconsciousness."

Dixon and Smart⁶ regard paraldehyde as "one of the safest of the basal hypnotics, for there is no respiratory depression." They advise 1 drachm (4 cc.) doses hourly up to 1 ounce (30 cc.), if needed, in asthma and lobar pneumonia.

Webster⁷ concludes that "the fatal dose of paraldehyde is difficult to state, as very large quantities have been taken without any serious consequences other than prolonged unconsciousness." He further cites the two cases referred to by Peterson and Haines.

Solis-Cohen and Githens⁸ regard 20 cc. as not a dangerous dose in man and in support refer to the case reported by Mackenzie in which recovery followed the ingestion of 100 cc., the sleep lasting thirty-four hours.

Meyer and Gottlieb⁹ regard paraldehyde "as a hypnotic which is really free from subsidiary actions on the functions of other organs." They advise from 4 to 6 Gm. in severe insomnia and state that from 30 to 60 Gm. has been taken without harm.

1. Underhill, F. P.: *Toxicology*, revised by Theodore Koppanyi, ed. 3, Philadelphia, P. Blakiston's Son & Co., 1936, p. 233.

2. Paraldehyde is a liquid, and since its specific gravity is 0.99 at 25 C., the dosage may be expressed either in grams or in cubic centimeters.

3. Leschke, Erich: *Clinical Toxicology*, translated by C. P. Stewart, Baltimore, William Wood & Co., 1934, p. 185.

4. Sollmann, Torald: *Manual of Pharmacology*, ed. 5, Philadelphia, W. B. Saunders Company, 1936, p. 731.

5. Cushny, A. R.: *Pharmacology and Therapeutics*, revised by C. W. Edmunds and J. A. Gunn, ed. 11, Philadelphia, Lea & Febiger, 1936, p. 363.

6. Dixon, W. E.: *Manual of Pharmacology*, revised by W. A. M. Smart, ed. 8, New York, Edward Arnold & Co., 1936, p. 44.

7. Webster, R. W.: *Legal Medicine and Toxicology*, Philadelphia, W. B. Saunders Company, 1930, p. 751.

8. Solis-Cohen, Solomon, and Githens, T. S.: *Pharmacotherapeutics*, New York, D. Appleton & Co., 1928, p. 1611.

9. Meyer, H., and Gottlieb, R.: *Experimental Pharmacology*, ed. 2, English translation by V. E. Henderson, Philadelphia, J. B. Lippincott Company, 1926, p. 105.

Brundage¹⁰ was unable to find a report of a fatal case but states that 1 drachm has produced serious symptoms and that recovery has followed a dose of 3½ ounces (105 cc.).

Heffter¹¹ states that the toxicity of paraldehyde in man is low, doses of from 10 to 12 Gm. producing only deep sleep with practically unaltered blood pressure and respiration.

Witthaus¹² does not list paraldehyde in his comprehensive work on toxicology, a remarkable fact when one considers that the drug had been employed since 1882.

Peterson¹³ and Haines found "acute poisoning with paraldehyde very rare." They cite the O'Brien case in which death occurred in a patient with typhoid after a dose of about 25 cc., and that of Mackenzie, in which recovery occurred after 104 cc.

Clinicians have for some time been using paraldehyde as a preanesthetic agent. Stewart¹⁴ used it in more than 500 cases rectally before operation, the adult dose being 30 cc. except when the patient's weight was less than 112 pounds (51 Kg.), when he used 1 drachm for each 14 pounds (6.4 Kg.) of weight. He has had no bad results.

Sourasky¹⁵ employs paraldehyde by rectum in children as a preliminary to tonsillectomy, the dose being 1 drachm for each 14 pounds of body weight.

Garrett and Gutteridge¹⁶ use paraldehyde as a basal narcotic, the rectal dose being 0.25 cc. per kilogram of body weight; that is, a man weighing 150 pounds (70 Kg.) would receive about 19 cc.

Kane and Roth¹⁷ successfully use it rectally for the relief of labor pains, the dose being 1.2 cc. for each 10 pounds (4.5 Kg.) of body weight.

Kotz and Katzman¹⁸ use it for obstetric basal analgesia, the dose being from 6 to 8 drachms (24 to 32 cc.), depending on the weight of the person and on the severity of the pains.

Rosenfield and Davidoff¹⁹ use it for obstetric analgesia, giving from 4 to 6 drachms (16 to 24 cc.) by rectum in a single dose.

Colvin and Bartholomew²⁰ also use it as a basic amnesia producing agent in obstetrics, the rectal dose being from 6 to 8 drachms.

Fitzwilliams²¹ considers it useful as a basal preanesthetic agent if the dosage is not greater than 1 drachm for each 14 pounds (1 stone) when given rectally in three equally divided doses over a forty minute period.

Henderson²² uses it for producing preanesthetic narcosis, the average dose being from 20 to 25 cc. by rectum. He has given up to 100 cc. without untoward effects.

Piker and Cohn²³ use from 11 to 15 cc. one to three times daily for sedation in the management of delirium tremens.

Mackenzie²⁴ reported a case of a married woman who took 3½ ounces of paraldehyde; consciousness returned in thirty-one hours, recovery of ability to reply to questions in forty-one hours and complete recovery soon after.

MacFall²⁵ reported a fatality in a man aged 41 who had been accustomed to taking from 1 to 2 drachms of paraldehyde daily for some months. He apparently took as much as from 2½ to 3 ounces (75 to 90 cc.) before retiring and was found dead the next morning. Autopsy revealed hyperemia of the stomach and upper portion of the intestine and congestion at the bases of the lungs. The liver, spleen and kidneys were normal.

Raimann²⁶ described two cases in each of which a 50 Gm. dose was taken without manifestation of other effects than profound depression for from fourteen to nineteen hours.

An anonymous writer²⁷ reported to the editor of the *Lancet* a fatal ending after administration of from 6 to 7 teaspoonfuls to a woman, aged 20, who was in violent delirium from typhoid for which slight hopes were being entertained of her recovery. This case is known in the literature as the O'Brien (Bridget) case. Death occurred after four hours.

Brown²⁸ reported a case of paraldehyde idiosyncrasy in a man aged 20, weighing 123 pounds (56 Kg.), in whom deep unconsciousness took place after a dose of 16 cc. The patient was rather anemic, having had a gastro-enterostomy one year previously. Recovery from the paraldehyde occurred within twenty-four hours. The prominent symptoms present were complete loss of reflexes, profound stupor, very little depression of blood pressure, rise of temperature to 102.4 F. and diminished respiratory exchange.

McDougall and Wyllie²⁹ recently reported fatal poisoning in a woman, aged 44, who died fifty hours after taking 4 ounces (120 cc.) of paraldehyde. Their patient had a mental disorder and had leaped from a window about nine months previously, producing severe cerebral concussion. An autopsy was obtained and softening of the right temporal lobe of the brain was found. The temperature on the second day rose to 105 F., indicating that infection may possibly have been a contributing factor in her death.

More³⁰ described a case in which recovery occurred after 2 ounces (60 cc.) had been taken. A man, aged 71, was admitted to the hospital Nov. 28, 1933, at 11 a. m. in a state of profound unconsciousness, the temperature being subnormal and the pulse 130. Conjunctival and pharyngeal reflexes were absent. It was later learned that the patient had taken, on November 27, 2 ounces of pure paraldehyde as a hypnotic. Under treatment with stimulants, the reflexes began to return at 7 p. m. on the day of admission and there was complete consciousness at 7 o'clock the following morning.

REPORT OF CASE

A white woman, aged 31, was first seen in September 1936, at which time her weight was 143 pounds (65 Kg.). Her body was well developed and well nourished and showed no gross

10. Brundage, A. H.: *Manual of Toxicology*, Brooklyn, H. Harrison Company, 1926, p. 190.

11. Heffter, A.: *Handbuch der Experimentellen Pharmakologie*, Berlin, Julius Springer, 1923, pp. 1, 433.

12. Witthaus, R. A., and Becker, T. C.: *Medical Jurisprudence, Forensic Medicine and Toxicology*, ed. 2, Baltimore, William Wood & Co., 1911.

13. Peterson, F.: *Legal Medicine and Toxicology*, Philadelphia, W. B. Saunders Company, 1904.

14. Stewart, J. D.: *Brit. M. J.* 2: 1139 (Dec. 24) 1932.

15. Sourasky, J. I.: *Brit. M. J.* 2: 993 (Dec. 13) 1930.

16. Garrett, E. B., and Gutteridge, Eric: *M. J. Australia* 2: 46 (July 8) 1933.

17. Kane, H. F., and Roth, G. B.: *The Relief of Labor Pains by the Use of Paraldehyde and Benzyl Alcohol*, *J. A. M. A.* 107: 1710 (Nov. 21) 1936.

18. Kotz, Jacob, and Katzman, Sollic: *Anesth. & Analg.* 16: 301 (Nov.-Dec.) 1937.

19. Rosenfield, H. H., and Davidoff, R. B.: *New England J. Med.* 207: 356 (Aug. 25) 1932.

20. Colvin, E. D., and Bartholomew, R. A.: *The Advantages of Paraldehyde as a Basic Amnesia Agent in Obstetrics*, *J. A. M. A.* 104: 362 (Feb. 2) 1935.

21. Fitzwilliams, D. C. L.: *Brit. M. J.* 2: 472 (Sept. 7) 1935.

22. Henderson, John: *Ann. Surg.* 103: 46 (Jan.) 1936.

23. Piker, Philip, and Cohn, J. V.: *The Comprehensive Management of Delirium Tremens*, *J. A. M. A.* 108: 345 (Jan. 30) 1937.

24. Mackenzie, T.: *Brit. M. J.* 2: 1254, 1891.

25. MacFall, J. E. W.: *Brit. M. J.* 2: 255 (Aug. 8) 1925.

26. Raimann, E.: *Wien. klin. Wchnschr.* 12: 609, 1892.

27. *Lancet* 2: 423, 1890.

28. Brown, Gilbert: *Brit. J. Anesth.* 13: 25 (Oct.) 1935.

29. McDougall, John, and Wyllie, A. M.: *J. Ment. Sci.* 78: 374 (April) 1932.

30. More, William: *Brit. M. J.* 1: 428 (March 10) 1934.

abnormalities. The eyes and ears were normal. The teeth were in good condition and the tonsils had been removed. The nose showed some mild catarrhal drainage from the sinus spaces. There was no evidence of any cervical or other glandular enlargement. The thyroid appeared normal. The lungs were normal to tactile fremitus, percussion and auscultation. The heart was normal in shape, size and position, the sounds being regular and of good intensity. No murmurs could be heard. The blood pressure was normal. There was no vascular sclerosis. The liver, gallbladder and spleen were not palpable. There was no edema of the ankles. Hemoglobin was 80 per cent (Dare) at this time. The urine was normal.

The patient's parents are still living and in fairly good health. She had whooping cough and scarlet fever during childhood, from each of which she made a complete and uneventful recovery. She is said to have had "walking typhoid" at 14 years but since she was not particularly ill at that time no blood tests were made to confirm such a diagnosis. She had a severe attack of sinusitis and bronchitis eleven years before we saw her and made a complete recovery from the bronchitis. The sinus infection improved after a short period spent in Florida. X-ray examination of the lungs showed no evidence of tuberculosis. After her return from Florida the appendix was removed, from which operation she made a normal recovery. Exploration of the gallbladder and pelvis at the time revealed no abnormalities. Periodic attacks of her sinus infection during the last eight years led to an exploration of the antrums about four years before we saw her. Little or no inconvenience was caused by the sinus infection during the last two years. She suffered from dysmenorrhea and menorrhagia for about five years previous to her marriage, but pelvic examination at that time showed a slight retroversion and a mild cervical erosion. The menstrual abnormality was relieved by endocrine therapy, and cauterization of the cervix cleared the erosion.

The patient's last normal menstrual period began Aug. 17, 1936. She experienced some nausea in September, which continued periodically until December, when she was advised to discontinue her work as a nurse.

Examination of the urine and blood pressure at this time and subsequently during the pregnancy showed both to be normal. The hemoglobin was determined in February and found to be 70 per cent. Administration of a proprietary liver preparation caused an increase to 83 per cent, at which figure it remained during the rest of the pregnancy. Calcium compounds and a vitamin D concentrate were also given throughout the pregnancy. During the last month of pregnancy edema of the ankles was present at the end of the day, but examination of the urine revealed no abnormality. Throughout the last two weeks she complained of lack of energy, with considerable exhaustion toward evening.

The appearance of edema, varying periods of nausea, lack of energy and exhaustion led to a complete examination May 15. In view of the symptoms of toxemia it was considered best to induce labor on the morning of May 20, at which time quinine and castor oil were administered. She was admitted to the hospital at 3 p. m. in active labor. At this time the blood pressure was 148 systolic, 98 diastolic and both maternal and fetal heart sounds were normal. Pelvic examination at 5:30 p. m. showed the cervix to be dilated 2.5 cm. with the head presenting in the left occipito-anterior position and partially engaged. Uterine contractions were occurring at intervals of from two to five minutes, the pains being quite severe. Having previously found that she took ether poorly and that she was sensitive to drugs (acetylsalicylic acid, morphine and codeine causing extreme nausea and depression), we decided, with the patient's consent, to administer paraldehyde as an analgesia-producing agent and accordingly 31 cc. of paraldehyde was given by rectum at 6:30. Ten minutes later the patient was in deep sleep. At 6:45 the respiratory rate suddenly increased from 20 to 40 per minute and the heart rate from 90 to 120. At 7 o'clock the patient went into coma with cyanosis, labored and rapid respiration and rapid, irregular pulse. The fetal heart rate had increased from 112 to 150 per minute. Two ampules of coramine was administered. At 7:30 the respiration

was less labored, cyanosis had disappeared and the pulse rate had slowed to 110. Her condition continued to improve somewhat except that the deep coma persisted. At this time the pupils remained fixed in partial dilatation, and the uterine contractions diminished. The fetal heart rate dropped to 140 per minute. Auscultation of the maternal heart showed no presence of valvular insufficiency.

At this time one of us (J. K.) was called in consultation and it was believed that her condition was not alarming and that she would probably sleep through the night and deliver without difficulty in the morning. At 10 o'clock her condition suddenly changed, the patient again becoming cyanotic, the respiration labored and irregular, and the pulse rapid, irregular and weak. Auscultation disclosed a loud blowing murmur over the area of the tricuspid valve, indicating failure of the right side of the heart. The blood pressure was 118 systolic, 58 diastolic. Coramine and oxygen were then administered, which relieved the cyanosis and labored respiration; the cardiac condition, however, showed no improvement. About 250 cc. of blood was then withdrawn to relieve the pressure on the right side of the heart, following which 100 cc. of 25 per cent dextrose was administered intravenously. Digifolin was also given intravenously but the pulse continued to become weaker and more irregular, and the tricuspid murmur grew louder and more harsh. Oxygen was continued, since cyanosis resulted if it was withheld. Two doses (a total of 6 mg.) of picrotoxin were given intravenously without benefit.

At this time the patient's condition appeared hopeless, as pulmonary edema was marked. A cesarean section was performed at 1:50 a. m. May 21 and a live female child was born whose condition was poor, several hours of oxygen-carbon dioxide administration being necessary for resuscitation. The patient did not require further anesthesia for the section, since coma was so deep that all reflexes were abolished. Efforts at resuscitation were continued during the operation aside from the drugs that were used to stimulate cardiac action and respiration. Intratracheal suction was employed to prevent the patient from drowning in her own secretions and to allow the entrance of oxygen. Despite all efforts, including stimulation of the sino-audicular node as recommended by Dr. A. S. Hyman, death occurred at 2:50.

NECROPSY

The significant observations made at necropsy by Dr. Oscar B. Hunter, pathologist of the Sibley Hospital, were as follows:

On section there was a considerable amount of superficial fat of a pale lemon yellow color evenly distributed. The musculature was well developed; the fibers presented a moderately coarse appearance, which was more or less normal. When the abdomen was opened the stomach was markedly ballooned with gas. The intestine contained a moderate amount of gas. The uterus presented a normal appearance of a full term uterus which had been emptied. There was definite calcification of the costal cartilages. On closer examination of the chest the anterior aspect appeared to be slightly flattened and the ribs were slightly angulated at the junction of the costal cartilages. There was no evidence of any other gross abnormality. The thoracic and abdominal viscera were normal in position and relation except for considerable dilatation of the right side of the heart. The patient was moderately dehydrated. The abdominal and thoracic tissues were moderately dry. There was a small amount of emphysematous bubbles, probably the result of artificial respiration.

The thyroid, stomach, intestine, gallbladder, pancreas, uterus and urinary bladder were normal.

The liver was soft and of a slate gray. The capsule of Glisson was smooth and glistening. The cut surface showed evidence of toxic hepatitis of long standing. There was some staining with bile. There was evidence of well defined cloudy swelling, granular degeneration and fatty infiltration. There was considerable engorgement of the sinusoids with possible focal necrosis in the region of the central veins. The connective tissue in the periportal spaces appeared to be slightly thickened. Sections through various portions of the liver revealed no evidence of thrombosis, infarcts or abscesses.

The spleen was well developed, slightly enlarged and adherent to the undersurface of the diaphragm. It showed a few superficial notchings. The capsule was slightly thickened and there was some proliferation of the malpighian corpuscles. The pulp was fairly firm and cut with slightly increased resistance. There was a mild degree of splenic tumor present.

The left kidney was normal in position and relation and the vessels and ureter entered and left in a normal manner. It was normal in size and fairly soft and there were small remnants of fetal outlines present. The kidney cut without increased resistance and the perirenal tissues contained a marked amount of fat. The cortex was swollen and presented a white and somewhat granular appearance with swelling of the columns of Bertini. The capsule stripped very easily, leaving a somewhat congested surface. The picture presented was that typical of a toxic nephrosis of some standing. There was no evidence of pyelitis or any infectious process.

The right kidney was normal in position and relation and presented more or less the same picture as the left side. There was a marked degree of hydro-ureter and hydronephrosis. It cut without increased resistance and showed considerable congestion and some edema. The pelvis was slightly dilated and the cortex was swollen with marked congestion of the interlobular vessels. There were considerable swelling of the parenchyma and cloudy swelling changes in the epithelium.

The left adrenal gland was quite soft, somewhat enlarged and quite congested. The cortex was yellow and the medulla was filled with blood. There was no evidence of adenoma or other unusual pathologic change present.

The right gland was enlarged, congested and somewhat swollen. The medulla and cortex presented much the same picture as the opposite side. There was no evidence of adenomatous changes or other specific pathologic changes.

The right side of the heart was dilated and the left side contracted. The right side collapsed when the blood was removed. The heart did not appear to be enlarged and there was a moderate amount of fluid in the pericardium. The vessels entered and left in a normal manner. There were no adhesions between the visceral and the parietal pericardium. There was a moderate amount of superficial subpericardial fat, which was normal in distribution.

The right atrium was widely dilated. The walls were stretched. The chordae tendineae and pectinate muscles were well developed but definitely stretched. There was some subendocardial fibrosis in the region of the fossa ovalis but there was no endocarditis.

The tricuspid orifice of the right ventricle was widely dilated, admitting four fingers. The tricuspid valves were well formed. There was a slight amount of thickening of the inferior margin of the leaflets. The pectinate muscles were well developed and the chordae tendineae were fine and delicate. There was no special enlargement of these structures. The columnae carnae tore with slight ease. There was definite evidence of chronic toxic myocardosis but no evidence of endocarditis or valvular disease present.

The pulmonary semilunar valves were well defined. There was slight thickening of the inferior margin but no sagging of the commissures.

The left atrium was slightly dilated. There was some subendocardial fibrosis of a patchy character, for the most part in the region of the fossa ovalis. There was no evidence of endocarditis.

The mitral valves of the left ventricle were well defined. There was slight thickening of the inferior margin of the middle leaflet and some beginning sclerosis at the bases of the leaflets. The columnae carnae were well defined and the musculature was very pale. There was a small amount of chicken fat clot. There was evidence of definite toxic myocardosis.

The semilunar valves were well defined; there was slight thickening of the inferior margin but there was no sagging of the commissures. There was also slight thickening of the bases. There were some soft, punctate, early atheromatous spots. The aortic orifice was patent.

Transverse sections through the coronary showed no evidence of coronary thrombosis or occlusion. The cut surface exuded liquid blood.

The great vessels of the neck were normal in position and relation. The aorta was soft and pliable.

There was no evidence of enlarged lymph nodes in the mediastinum, peribronchial or peritracheal regions.

The left lung was free in the pleural cavity. There was no increased amount of fluid present. There was marked congestion of the lower lobe with some petechial hemorrhages under the visceral pleura of the posterolateral aspect. The upper lobe showed compensatory emphysema. There was considerable congestion posteriorly. There was no evidence of infarcts or abscesses. Sections through the bronchial tree showed a moderate amount of frothy fluid and considerable mucus but no evidence of any obstruction of the bronchi. There was marked hypostatic congestion of the lower lobe. There was very little air in the alveoli. The upper lobe showed much the same picture posteriorly with evidence of compensatory emphysema in the anterior aspect.

The right lung was free in the pleural cavity. There was marked hypostatic congestion of the posterior aspect of the lower lobe with numerous petechial hemorrhages, probably the result of artificial respiration. The lung was quite heavy and the bronchi were filled with a considerable amount of grayish mucus and frothy fluid. The upper lobe showed considerable hypostatic congestion and edema. The lower lobe was quite dark and markedly edematous and showed pronounced hypostatic congestion. There was no evidence of infarcts, abscesses or pneumonia.

The anatomic diagnosis was:

1. Toxemia of pregnancy.

(a) Marked toxic hepatitis with cloudy swelling and fatty infiltration.

(b) Toxic nephrosis with pronounced cloudy swelling and a mild degree of hydronephrosis and hydro-ureter, particularly on the right side.

2. Mild chronic splenic tumor with toxic hyperplasia of the malpighian corpuscles.

3. Toxic adrenalitis with marked congestion.

4. Toxic myocardosis with marked dilatation of the right side of the heart.

5. Marked hypostatic congestion and edema of both lungs.

COMMENT

Under paraldehyde analgesia certain pharmacologic changes occur that are recognized as being normal. The conjunctival and corneal reflexes are absent and the pupils contract. The blood pressure drops from 10 to 30 mm. of mercury, the pulse rate being increased from 20 to 70 beats per minute. The respiratory rate is increased from 4 to 10 per minute with increased amplitude. The patient is in deep sleep.

At the time during labor when one of the authors (J. K.) was called in, consultation, our case presented this picture, although a somewhat exaggerated one. The abrupt change that occurred shortly thereafter indicated the onset of cardiac failure, from which the patient did not recover. This failure was shown at necropsy to have had a definite anatomic basis. Its onset was probably precipitated by the drug administration.

Since January 1935 we have used paraldehyde in more than 600 labor cases with very gratifying results. It is an effective analgesic which is relatively quite safe. We believe that its use should not be discontinued because of our one fatality incident to its administration, an event which might occur with any drug to which a patient is hypersusceptible. Such hypersusceptibility to paraldehyde seems to be quite rare. It is best, however, that the use of paraldehyde should be limited to hospital patients since the patient under its influence requires special care, particularly during labor.

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Clinical Notes, Suggestions and New Instruments

TOPHI OF THE HEELS

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Gout is doubtless more prevalent than is commonly believed, yet the presence of tophi that simulate other lesions is quite rare. Out of a total of 24,766 admissions to the medical wards of the Peter Bent Brigham Hospital from 1913 to 1924 there were forty-four cases of gout.¹ In Hench's series of 100 cases from the Mayo Clinic, proved tophi were found in forty-one.

While tophi may be found in many locations, they have, according to Monroe,² a peculiar affinity for the ears. In this location he found them in 90 per cent of his cases. Tophi of the heels resembling pyogenic lesions are extremely uncommon.

REPORT OF CASE

B. H., a man aged 61, a blacksmith, came to our office in the fall of 1937 complaining of discharging lesions on the heels and pain in the heels associated with these sores. Examination of the heels revealed on each an indurated lesion about the size of a quarter (24 mm.). The lesions were slightly



Ulcerated tophi of the heels.

raised and not sharply delimited. Each was ulcerated in a small area near its center. From these small eroded centers a thick, gray, stringy material was obtained. The patient remarked about this discharge and stated that it was similar to that obtained from similar lesions on previous occasions.

Examination of this material under the microscope revealed the presence of many acicular crystals. They were variously disposed, some assuming a group arrangement not unlike the appearance of the ray fungus. When some of this material was shaken up in a test tube of water, nothing resembling sulfur bodies or cayenne pepper granules could be seen. Culture yielded no growth.

Past history told of many attacks of pain in the joints. The first attack was characterized by severe pain in the knee. The patient was then about 30 years of age. This bout of pain was of such severity as to cause him to stay in bed most of the time for three or four weeks. Nearly coincident with this attack he noticed a small gray nodule in the right ear, which had been present most of the time since. The attacks of pain in the joints recurred several times a year and varied in duration from a few days to a week or more. Most commonly the pain would start in a big toe, the ankles, knees and hands also being commonly involved, and sometimes pain was complained of under the heels. Exposure to cold is credited with bringing on many of the attacks.

The lesions on the heels appeared as pimples in 1929. They increased in size and at times were painful. They have been opened five times under the supposition that they were of pyogenic origin. Recurrences varied somewhat in location. In 1932 enlargements appeared on the hands; they have slowly progressed. The largest ones are situated adjacent to the metacarpophalangeal articulations. At times they have become swollen and tender. The patient has been a moderate user of beer, except during prohibition. He had never been on a diet until this fall. His father suffered from a similar ailment.

Smears of the discharge from lesions on the hands and heels showed acicular crystals characteristic of sodium mono-urate. Uric acid on the patient's blood showed a uric acid content of 6.31 mg. per hundred cubic centimeters.

Treatment consisted of a diet low in purines, tincture of colchicum, incision and drainage of the lesions on the heels. The response to treatment was satisfactory.

SUMMARY

In a case of gout in which there were ulcerated tophi of both heels, the lesions had five times previously been mistaken for ulcerations of pyogenic origin.

CONTINUOUS NASOPHARYNGEAL SUCTION IN THE TREATMENT OF BULBAR TYPE OF POLIOMYELITIS

O. WILLIAM ANDERSON, M.D., SEATTLE

In most epidemics of poliomyelitis a variable percentage of the patients have bulbar involvement. In some epidemics the majority of such cases are rapidly fatal, while in other outbreaks some of these patients make a satisfactory recovery if symptomatic treatment is adequate.

Usually a prominent feature in bulbar poliomyelitis is inability to swallow because of paralysis of the muscles of deglutition. As a result of this paralysis there is a constant stasis of mucous secretion in the pharynx, and the removal of this secretion is probably the most important measure in the care of the patient. When it is not possible to have a special nurse constantly with a patient who requires frequent aspiration, there is always danger of the patient drowning in his own secretions. But even in cases in which suction is frequent a grave hazard exists that small amounts of material may lead to an aspiration pneumonia, which is almost surely fatal. In the early stage of severe bulbar types the amount of secretion is often excessive, and the patients are too acutely ill and weak to lie on their sides or face down and still do well. It is at such a time that continuous removal of the buccal secretions is of paramount importance. When the secretions are allowed to gather in the pharynx, the patient becomes characteristically apprehensive and restless. To introduce a suction tube periodically aggravates seriously an already grave condition.

The following method removes these secretions continuously with little or no discomfort to the patient and has been found much more satisfactory than the customary periodic suction. A No. 10 to 16 French catheter is used, the diameter depending on the size of the patient's nasal passage. From twelve to fifteen holes are burned into the distal half inch of the catheter with a hot needle. The catheter is inserted in the nose and, with the tongue depressed, adjusted so that the tip can be seen lying at the base of the tongue. The catheter is then fastened in this position by adhesive strips at the nostril. With the foot of the bed elevated and the patient lying on his back, suction now will drain the most dependent region of the pharyngeal cavity. The perforations of the catheter are limited to the distal half inch, as already mentioned, so that no energy is wasted above the pharynx. When the openings are made on all sides of the catheter tip it becomes impossible for them all to be closed by mucous membrane, thus lessening irritation to the mucous membrane and insuring continuous suction. The catheter is now connected to a portable water suction apparatus attached to a faucet. It is important that a trap (a corked bottle with two inlets) be inserted in the line leading from the catheter to the faucet. This eliminates the danger of backflow

From the Municipal Contagious Disease Hospital, Chicago Board of Health.

1. Pratt, J. H., in Cecil's Textbook of Medicine, ed. 3, Philadelphia, W. B. Saunders Company, 1934.
2. Monroe, R. T.: M. Clin. North America 18: 999 (Jan.) 1935.

to the patient, which might result from a sudden change in pressure. This apparatus can be used over a considerable time, and if alternate nostrils are used every twelve to twenty-four hours no trauma to the nose or throat should result.

Several other advantages of this method have been noted. When the continuous suction is instituted, the patient loses his anxiety and promptly falls off to sleep. Those in attendance can be at ease, knowing that the secretions are being taken care of. Although for the first day or two of the acute stage the patient may have to subsist on intravenous fluids, nasal gavage feedings should be started as soon as feasible. With the nasal suction in place, the gavage feeding is given through the other nostril. If the patient regurgitates the feeding, which is always a possibility, the suction will take up the regurgitated feeding before it can be aspirated. Also the patient can be made more comfortable by being given small amounts of water by mouth. This loosens the sticky mucus that forms in the mouth. As this flows back into the throat, it too is aspirated.

This technic would seem equally useful in other conditions in which the removal of secretions gathering in the throat is a menacing problem. Patients with postdiphtheritic paralysis and those in a prolonged state of coma, such as occurs in encephalitis and head injuries, should be favorable subjects for the method described. Even patients with tetanus who cannot swallow because of spasm of the throat muscles might be helped in this way.

1305 Fourth Avenue.

Special Article

THE CHEMISTRY OF VITAMIN D

CHARLES E. BILLS, PH.D.

EVANSVILLE, IND.

This article and others recently published or to be published comprise a new series on the present status of our knowledge of the vitamins. They have been prepared under the general auspices of the Council on Pharmacy and Chemistry and the Council on Foods. The opinions expressed are those of the authors and not necessarily the opinions of either council. Reprints are not available but the articles will be published later in book form.—Ed.

Studies of recent years have shown beyond a doubt that there are several chemically distinct forms of vitamin D. Nevertheless, this vitamin is still spoken of in the singular, chiefly as a convenience and because its multiple nature was not recognized for about a decade after the first form was discovered. Custom limits the application of the term vitamin D to antirachitic sterol derivatives and to the unidentified antirachitic components of fish oils and other foods which are supposed to belong to this group.

Of the several forms of vitamin D which have been recognized to date, two are known to be of prime importance in medicine. These are activated ergosterol and activated 7-dehydro-cholesterol. Other forms undoubtedly contribute to the total antirachitic effectiveness of certain agents, and it may be that the importance of some is greater than now appears. But for practical purposes, one may consider that all antirachitic medicines and foods owe their peculiar property chiefly to either or both of the two forms mentioned.

Activated ergosterol comes to the physician in several types of products which he may not always recognize as essentially identical. Ergosterol, activated by exposure to ultraviolet rays and dissolved in an oil, is viosterol in oil. Similar solutions are known abroad under several other trade names. Activated ergosterol separated from the unimportant by-products of irradiation

and crystallized comprises one form of vitamin D in the pure state. This is known to English and American chemists as calciferol. The Germans sometimes call it vitamin D₂. Since ergosterol is the principal sterol of yeast, and probably the only activatable one present, it follows that irradiated yeast owes its antirachitic action to its content of calciferol. When irradiated yeast is fed to cattle, the milk obtained is known as "metabolized" vitamin D milk. Since milk normally contains no important amount of vitamin D, the vitamin D of this special milk is essentially the calciferol which is transferred from the yeast. Thus the vitamin D of viosterol, irradiated yeast and yeast milk is one and the same; namely, calciferol.

Activated 7-dehydro-cholesterol has been identified, somewhat incompletely, as the form of vitamin D to which most other antirachitic agents owe their virtue. 7-Dehydro-cholesterol appears to be the principal activatable sterol, or provitamin, in cholesterol, the chief sterol of animal fats. Its active form thus comprises the vitamin D, which is produced in the skin, fur or feathers of animals exposed to sunlight or other sources of ultraviolet rays. For the same reason it is the form of vitamin D present in irradiated milk. It has been identified in certain fish oils and probably is the chief form, though certainly not the only form, of vitamin D that these oils contain. Since fish oils are almost universally used in poultry feeds, it appears that a substantial amount of this form of vitamin D finds its way into eggs, supplementing the supply produced by insolation of the feathers and skin of the birds. (Eggs are the only common food, except fish, naturally containing substantial amounts of vitamin D.) Fish oil concentrates are widely used to "vitaminize" milk, and the milk so treated is essentially the same as irradiated milk, but different from yeast milk, as regards the kind of vitamin D which it contains.

ACTIVATED ERGOSTEROL

Activated ergosterol is the form of vitamin D best known to the chemist.¹ Its parent substance, or provitamin, ergosterol, is the characteristic sterol of fungi. Ergosterol was first obtained from mushrooms by Bracconot in 1811. It was rediscovered by several nineteenth century chemists and was particularly studied by Tanret between 1879 and 1908. Tanret named it ergostérine because of its occurrence in ergot and its similarity to the cholestérine of Chevreul. It is now prepared from yeasts and molds, in which fungi it occurs in amounts up to 2 per cent of the dry weight, the quantity varying with the species and conditions of culture. Its origin is obscure, but seemingly it is related more closely to the metabolism of carbohydrates than to that of fats.

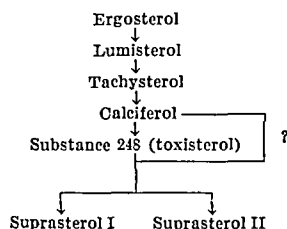
Ergosterol, C₂₈H₄₄OH, forms small colorless crystals usually containing some water of crystallization. The melting point varies with the water content, being 166° C. for the nearly anhydrous sterol. Polariscopic measurements show $[\alpha]_{5461}^{20} = -171^\circ$ and $[\alpha]_D^{20} = -132^\circ$ in chloroform. Three double bonds are present. The heat of combustion is 9,950 calories₂ per gram. Commercial ergosterol contains about 5 per cent of

1. In this paper, most of the references are to recent studies. References to the earlier chemical and physiologic investigations are given in the author's previous reviews: Bills, C. E.: *Physiology of the Sterols Including Vitamin D*, *Physiol. Rev.* 15:1-97 (Jan.) 1935; *The Multiple Nature of Vitamin D*, *Cold Spring Harbor Symp. Quant. Biol.* 4:33-349, 1935 (Symposium of July 27); *New Forms and Sources of Vitamin D*, *J. A. M. A.* 109:13-15 (Jan. 2) 1937; *Fisher, L. F.: Chemistry of Natural Products Related to Phenanthrene*, New York, Reinhold Publishing Company, 1936.

α -dihydro-ergosterol, an inert sterol which always accompanies ergosterol in fungi and which is unaltered by irradiation. Ergosterol is insoluble in water, sparingly soluble in oils and freely soluble in most of the common organic solvents.

Although ergosterol is colorless, i. e., nonabsorbing of visible light, it absorbs certain ultraviolet wavelengths as powerfully as intense dyes do in the visible parts of the spectrum. It exhibits four narrow absorption bands, with maximums at wavelengths 260, 270, 282 and 293.5 millimicrons respectively. The phenomena of activation are closely associated with these bands of absorption.

When ergosterol is exposed to ultraviolet radiations of the wavelengths which it absorbs, a transformation into vitamin D (calciferol) begins at once. However, the ergosterol, even under the most favorable conditions, never gives a 100 per cent yield of calciferol. The transformation proceeds in overlapping steps, with the formation of a series of products of which calciferol is not the last. This intricate system has been studied most extensively by Windaus and his associates at Goettingen and can be illustrated conveniently, if not too well, by the following modification of a scheme given by Setz.



At no stage during the irradiation is any one of these substances present alone. More radiant energy seems to be required to decompose calciferol than to produce it, so that when the irradiation is not unduly prolonged calciferol is the chief product. Under the best conditions it may comprise nearly 50 per cent of the total, with tachysterol and lumisterol accounting for most of the remainder. Calciferol, lumisterol and the two suprasterols have been isolated in crystalline form. Tachysterol has been separated as a crystalline 3,5-dinitro-4-methyl benzoate. Substance 248, sometimes called toxisterol, has not been obtained pure.

The reactions are purely photochemical ones, little influenced by temperature. They can take place in boiling solvents or at room temperature or at the temperature of liquid air. Nothing is added to the ergosterol molecule and nothing leaves it. There is no polymerization. The changes are merely rearrangements within the molecule. Any wavelength of light that is absorbed by ergosterol can initiate the transformations. Activation takes place more effectively in solutions than in solid masses. Solutions that are agitated during irradiation are activated better than those which remain quiet. The presence of more than traces of air is detrimental. There is a specific solvent effect, in accordance with which various solvents which are satisfactory as to transparency and nonreactiveness are nevertheless unequally effective in promoting the activation of ergosterol dissolved in them.

To comprehend the molecular changes that occur when ergosterol and other D provitamins are irradiated, one must examine the structural formulas of these sterols. The accompanying figures and discussion are necessarily limited, though the field of sterol chemistry is wide.¹

Figure 1 shows the accepted sterol ring structure, with a side chain as in ergosterol. The ring system is a phenanthrene-cyclopentane complex, the same as in many of the sex hormones. It is, incidentally, one of the biggest aromatic nuclei with which the animal body has to deal. Hydrocarbons of this type are formed when sterols are subjected to dehydrogenation with suitable reagents, such as selenium.

The prototype of all sterols is cholesterol, shown in figure 2. Ergosterol (fig. 3) differs from cholesterol in its side chain, which contains a double bond at C₂₂ and a methyl group at C₂₄, and in its nucleus, which contains two double bonds instead of one. In hydroaromatic structures as complicated as the sterols, the possibilities of molecular rearrangement are great, yet

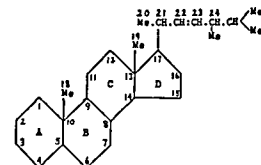


Fig. 1.—The sterol ring structure. Side chain shown as in ergosterol.

most of those which are known to occur are *cis-trans* changes at C₃, C₅, C₉ or C₁₀. The spatial geometry of these changes is not perfectly understood, and structural formulas as ordinarily written do not show them.²

In all naturally occurring sterols (but not in the sterol derivatives called vitamin D), the hydroxyl group at C₃ is *cis* to the methyl group at C₁₀. It is a rule that this configuration exists when a sterol is capable of forming a precipitate with digitonin—the familiar analytical reaction by means of which cholesterol and ergosterol are determined. Since none of the irradiation products of ergosterol reacts with digitonin, it is assumed that in them the OH at C₃ is *trans* to the CH₃ at C₁₀. This rearrangement is probably the first change brought about by the activating rays and perhaps the only difference between ergosterol and lumisterol. Except for this difference, and the possibility of another steric difference at C₉, ergosterol and lumisterol are identical. Figure 3 is the formula for each of them, and also for pyro-calciferol and iso-pyro-calciferol, two sterols which result from heating calciferol. All four differ from one another only as *cis-trans* isomers, indistinguishable in ordinary, two-dimensional formulas.²

The change from lumisterol to tachysterol involves a deeper alteration of the molecule. The structural formula of tachysterol is not known with certainty, but since tachysterol and calciferol yield the same dihydro

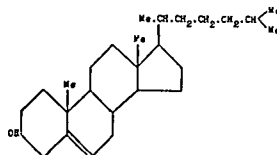


Fig. 2.—Cholesterol.

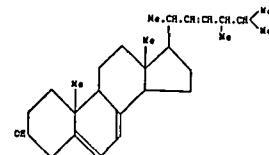


Fig. 3.—Ergosterol, lumisterol, pyro-calciferol and iso-pyro-calciferol.

derivative³ the two must have the same carbon skeleton. Tachysterol, like calciferol which follows it, has four double bonds instead of the three exhibited by lumisterol and ergosterol. The fourth double bond arises by a rupture of ring B. Tachysterol was given

2. Schoenheimer, Rudolf, and Evans, E. A., Jr.: Allcholesterol and Epiallocholesterol, J. Biol. Chem. **114**: 567-582 (July) 1936. Windaus, Adolf, and Dimroth, K.: Die Konstitution des Lumisterins und der Erhitzungsprodukte des Vitamins D₂ (Calciferols), Ber. deutsche chem. Gesellsch. **70**: 376-379 (Feb.) 1937.

3. Müller, M.: Zur Kenntnis des Vitamin D und seiner thermischen und photochemischen Umwandlungsprodukte, Ztschr. f. physiol. Chem. **233**: 223-234 (June 7) 1935.

its name in recognition of the speed with which it enters certain reactions. A tentative structural formula, suggested by Lettré, is given in figure 4.

In the change from tachysterol to calciferol, the molecule returns to a relatively stable form. The formula may be written either as in figure 5, which emphasizes the relation of calciferol to the sterols (steroid formula), or as in figure 6, which emphasizes the broken

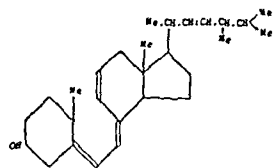


Fig. 4.—Tachysterol (a tentative formula).

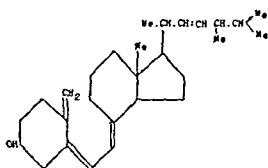


Fig. 5.—Calciferol (vitamin D₂). Usual, or steroid, formula.

ring B (stilbenoid formula). Different as the two formulas may look at first glance, they are actually the same. Figure 5 is the conventional representation, but figure 6 shows more clearly that the vitamin is not a sterol in the strictest sense, albeit a sterol derivative.

Irradiation of calciferol (i. e., overirradiation of ergosterol) occasions the formation of substance 248 and the two suprasterols. Substance 248 derives its name from its single intense absorption band, the maximum of which is at wavelength 248 millimicrons and is thus outstandingly different from the longer wavelength maximums of the irradiation products preceding it. Sometimes it is called toxisterol, in recognition of the toxic-calcifying properties which it exhibits out of all proportion to its antirachitic activity, if any. Toxisterol is formed most readily when alcohol is the solvent in which the overirradiation is conducted. When ether is the solvent it may not appear in detectable amounts. If it is formed at all it must immediately pass over to the suprasterols, into which it also passes when irradiation of alcoholic solutions is sufficiently prolonged. The substance has never been isolated, so practically nothing is known about it chemically.

The toxic properties peculiar to one particular brand of irradiated ergosterol solution were the subject of numerous reports in the medical literature of 1928 to 1930. The German manufacturer of the offending product had obtained two patents, one British⁴ and the other American,⁵ the specifications of which are most revealing. They call for the irradiation of ergosterol

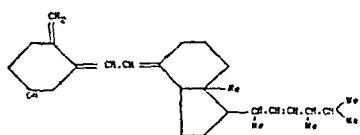


Fig. 6.—Calciferol, stilbenoid formula.

to be continued just until the absorption spectrum of what is now recognized as toxisterol attains its maximum! The mistake was clearly the result of assuming,

in the absence of proper bio-assays, that the spectrographically most conspicuous irradiation product was the vitamin. That this is not so was known, even in 1928, from a study⁶ conducted in this laboratory in which substance 248 was recognized as a decomposition product of the vitamin.

Whatever may be the number of double bonds in toxisterol, it appears that in suprasterol I the number is reduced from four to three. This results from a

closure of the break in ring B, but the closure which in this case is brought about by prolonged exposure to ultraviolet rays is different from that which is produced when the two pyro-calciferols are made from calciferol by the action of heat. In suprasterol I the restored ring B may be five sided rather than six sided (fig. 7). Less is known of suprasterol II; the distinction I or II is arbitrary and does not indicate sequence of formation. Even the number of double bonds, to say nothing of their position, is unknown.⁷

In the accompanying table is a summary of properties of the irradiation products of ergosterol, including also the properties of the pyro-calciferols.

ACTIVATED 7-DEHYDRO-CHOLESTEROL

For several years after the activatability of ergosterol was known there prevailed a hypothesis, disproved by Waddell⁷ in 1934, that traces of ergosterol comprised the provitamin to which the common sterols of animals and plants owed their activatability. This concept was based on the fact that the common sterols usually show the characteristic absorption spectrum of ergosterol more or less in proportion to their activatability. The possibility had been overlooked that there might exist other D provitamins having the same absorption spectrum as ergosterol.

On theoretical grounds it appeared that 7-dehydro-cholesterol might be such a provitamin. This compound was prepared in the following semisynthesis by Win-

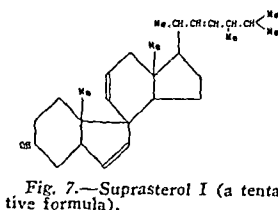


Fig. 7.—Suprasterol I (a tentative formula).

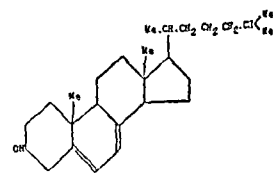


Fig. 8.—7-Dehydro-cholesterol.

daus, Lettré and Schenck⁸ and was found to be highly activatable. Cholesteryl acetate was oxidized by chromic acid to 7-keto-cholesteryl acetate. This was reduced by aluminum isopropylate to 7-hydroxy-cholesterol, the di-benzoate of which, when strongly heated, gave the mono-benzoate of 7-dehydro-cholesterol. From this the free sterol (fig. 8) was obtained by saponification.

In at least one instance, 7-dehydro-cholesterol has been chemically identified as the provitamin D of ordinary cholesterol. Windaus and Bock⁹ isolated it from the sterol of hog skin. Boer, Reerink, van Wijk and van Niekerk¹⁰ also isolated it from a crude cholesterol of unstated origin. However, ergosterol itself sometimes occurs in animal cholesterol, as was shown by Windaus and Stange¹¹ in eggs. This is probably an exceptional instance, associated with the fact that hens, unlike the mammals that have been investigated, absorb ergosterol from their food. The presence of ergosterol in eggs therefore seems casual, especially since the vitamin D of eggs is ordinarily not the ergosterol vitamin D, a form which, for birds, is relatively ineffective

4. British Patent 296,093, Nov. 15, 1928: Improvements in the Photochemical Production of Vitamin D from Ergosterol.

5. U. S. Patent 1,896,191, Feb. 7, 1933: Production of Vitamin D.

6. Bills, C. E.; Honeywell, E. M., and Cox, W. M., Jr.: Antirachitic Substances: IX. Quantitative Biophysical Studies on the Activation of Ergosterol, *J. Biol. Chem.* **80**: 557-563 (Dec.) 1928.

7. Waddell, J.: The Provitamin D of Cholesterol: I. The Antirachitic Efficacy of Irradiated Cholesterol, *J. Biol. Chem.* **105**: 711-739 (July) 1934.

8. Windaus, Adolf; Lettré, H., and Schenck, F.: Ueber das 7-Dehydro-Cholesterin, *Ann.* **520**: 98-106 (Sept.) 1935.

9. Windaus, Adolf, and Bock, F.: Ueber das Provitamin aus dem Sterin der Schweineschwarte, *Ztschr. f. physiol. Chem.* **245**: 168-170 (Jan. 29) 1937.

10. Boer, A. G.; Reerink, E. H.; van Wijk, A., and van Niekerk, J.: A Naturally Occurring Chicken Provitamin D, *Proc. Acad. Sc. Amsterdam* **35**: 622-632 (May) 1936.

11. Windaus, Adolf, and Stange, O.: Ueber das Provitamin des Eiersterins, *Ztschr. f. physiol. Chem.* **244**: 218-229 (Nov. 26) 1936.

in comparison with the vitamin D from 7-dehydro-cholesterol.¹² The chief evidence that 7-dehydro-cholesterol is the usual provitamin D of cholesterol is found in experiments with rats and chickens which show, in a word, that the vitamin D produced by irradiating the cholesterol from butter, brains, fish oils and other sources has the biologic properties of activated 7-dehydro-cholesterol rather than those of activated ergosterol.

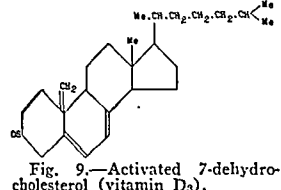


Fig. 9.—Activated 7-dehydro-cholesterol (vitamin D₃).

Activated 7-dehydro-cholesterol, prepared by irradiating the synthetic provitamin, has recently been obtained in crystalline form by Schenck.¹³ The crystalline vitamin has not yet been obtained from natural sources, but crystalline esters of it have been obtained from tuna¹⁴ liver (species not specified) and halibut¹⁵ liver oils. These esters resemble the corresponding esters of the artificially made vitamin, but the fish oil vitamin liberated from the esters could not be crystallized.

Physicochemical Properties of the Irradiation Products of Ergosterol and of the Thermal Decomposition Products of Calciferol

Substance	Melting Point, Degrees C.	Digitonin Reaction	Position* of Absorption Maximums, Millimicrons	Double Bonds	Specific Rotation, [α] _D		Temperature, Degrees C.
					Rotation, Degrees	Solvent	
	166	Positive	260, 270, 282, 293.5	3	−132	Chloroform	20
	118	Negative	265, 280	3	+192	Acetone	19
	?	Negative	268, 280, 294	4	−70	Benzene	18
	116	Negative	265	4	+106	Alcohol	20
	?	Negative	248	?	?		
	104	Negative	Only in far ultraviolet	3	−76	Chloroform	18
	110	Negative	Only in far ultraviolet	?	+63	Chloroform	19
	95	Negative	274, 284, 296	3	+502	Alcohol	20
	115	Partial	265, 280, 294	3	+332	Chloroform	20

* The position of the most important band is indicated by the use of bold face type.

This fact, and also the fact that the potency appears to be significantly less than that of the crystalline vitamin, suggest that the vitamin preparations from fish oils were not pure, even though the evidence is good that they consisted chiefly of activated 7-dehydro-cholesterol.

The formula of activated 7-dehydro-cholesterol is shown in figure 9, from which its close relationship to calciferol (fig. 5) is evident. It is, in fact, a demethyl-dihydro-calciferol, just as its provitamin (fig. 8) is a demethyl-dihydro-ergosterol. Its absorption spectrum resembles that of calciferol, just as the absorption spectrum of its provitamin resembles that of ergosterol. Its antirachitic effectiveness is the same as that of calciferol for rats but many times greater for chickens.

In the German literature, activated 7-dehydro-cholesterol is called vitamin D₃. Calciferol is vitamin D₂. But there is no vitamin D₁, this term having been preempted for a lumisterol-calciferol mixture originally mistaken for the pure vitamin. Vitamin D₄ is the name applied to activated 22-dihydro-ergosterol, to be described.

rachitic for rats than the other two D vitamins, and for chickens its activity, per rat unit, is intermediate.¹⁸

22-Dihydro-calciferol, or vitamin D₄, has not been isolated from natural sources. Possibly its provitamin occurs in the phytosterols of the plant kingdom. If so, this form of vitamin D is produced when vegetable products are irradiated, and it may come to the interest of the physician in such forms as irradiated rolled oats and breakfast foods.

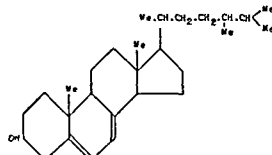


Fig. 10.—22-Dihydro-ergosterol.

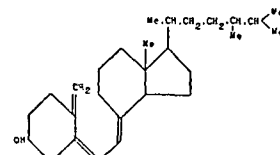


Fig. 11.—Activated 22-dihydro-ergosterol (22-dihydro-calciferol, or vitamin D₄).

By reactions analogous to those used in converting cholesterol into 7-dehydro-cholesterol, Wunderlich¹⁹ has converted sitosterol (fig. 12) into 7-dehydro-sitosterol (fig. 13). This has the "ergosterol" absorption bands and can be activated to a vitamin, supposedly of the formula shown in figure 14. This vitamin, differing by a side chain ethyl group from activated 7-dehydro-

12. Bills, C. E.; Massengale, O. N.; Imboden, Miriam, and Hall, Helen: The Multiple Nature of the Vitamin D of Fish Oils, *J. Nutrition* **13**: 435-452 (April 10) 1937.

13. Schenck, F.: Ueber das kristallisierte Vitamin D₃, *Naturwissenschaften* **25**: 159 (March 5) 1937.

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15. Brockmann, Hans: Die Isolierung des antirachitischen Vitamins aus Heilbutt-leberöl, *Ztschr. f. physiol. Chem.* **245**: 96-102 (Jan. 29) 1937.

16. Windaus, Adolf, and Langer, R.: Ueber das 22-Dihydro-Ergosterin, *Ann.* **508**: 105-114 (Dec.) 1933.

17. Windaus, Adolf, and Trautmann, G.: Ueber das kristallisierte Vitamin D₄, *Ztschr. f. physiol. Chem.* **247**: 185-188 (June 15) 1937.

18. McDonald, F. G.: The Multiple Nature of Vitamin D: III. Irradiated 22-Dihydro-Ergosterol, *J. Biol. Chem.* **114**: 1xv (May) 1936.

19. Wunderlich, W.: Ueber das 7-Dehydro-sitosterin, *Ztschr. f. physiol. Chem.* **241**: 116-124 (July 2) 1936.

cholesterol, appears to be much less antirachitic than the latter for rats. However, the two have not been compared in the pure state. Like vitamin D₂, this form of vitamin D may be produced when vegetable products are irradiated.

Again, by the same reactions, Linsert²⁰ has converted stigmasterol (fig. 15) into 7-dehydro-stigmasterol (fig. 16), which exhibits an absorption spectrum "very much like" that of ergosterol. Chemically, it differs from ergosterol only in that it has an ethyl group at C₂₄.

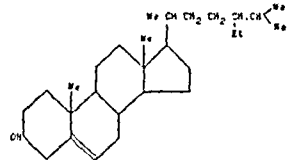


Fig. 12.—Sitosterol.

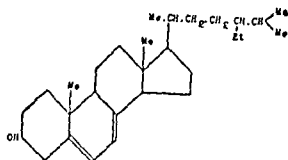


Fig. 13.—7-Dehydro-sitosterol.

instead of a methyl group. When irradiated, it most surprisingly does not become antirachitic, or at most very slightly so. This anomalous behavior, if true, is an instance of the fine specificity with which small molecular differences influence the physiologic properties of substances. It would be a matter of considerable theoretical interest to ascertain whether the reported failure of the expected new vitamin D is evident when the irradiated substance is given intravenously as well as when given by mouth.

Years ago, I observed that treatment of cholesterol with fullers' earth resulted in a slight activation. Yoder²¹ has traced this reaction to the formation of cholesterolene, the probable formula of which (fig. 17) has recently been given by Stavely and Bergmann.²² Cholesterolene sulfonic acid and its salts are definitely, though not powerfully, antirachitic for rats, and it has been reported that their effectiveness for chicks, per rat unit, is somewhat greater than that of cod liver oil. It will be observed that cholesterolene differs greatly in structure from the other forms of vitamin D.

Up to this point I have considered five forms of vitamin D, the chemical structures of which are well understood. Four of these are the active irradiation products of ergosterol, 7-dehydro-cholesterol, 22-dihydro-ergosterol and 7-dehydro-sitosterol respectively. The fifth, cholesterolene sulfonic acid, requires no irradiation. There are still other forms, as yet not understood chemically, but which deserve mention in passing.

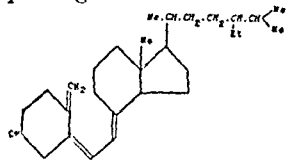


Fig. 14.—Activated 7-dehydro-sitosterol.

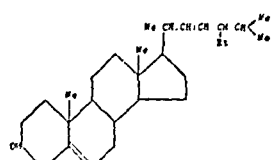


Fig. 15.—Stigmasterol.

Sixth: McDonald has found that by the irradiation of 7-hydroxy-cholesterol (or an impurity associated therewith) a slight antirachitic potency is developed. This may or may not be the same kind of vitamin D as that which is developed when cholesterol, freed from its normal provitamin and subsequently heated to produce a new provitamin, is irradiated.¹

Seventh: Cholesterol freed from its normal provitamin but not heated to produce the new one gives on irradiation a vitamin D which is less effective for chickens, per rat unit than the vitamin D which is formed by irradiating either unpurified cholesterol or heat-treated purified cholesterol.²³

Eighth: McDonald and I found that ergosterol, when suitably treated with nitrites, gives an active product of low potency. It is believed to be different from the ordinary forms of vitamin D which are destroyed by nitrites.¹

Ninth: Weinhouse and Kharasch²⁴ have produced a form of vitamin D by irradiating the heated reaction product of 7-keto-cholesteryl acetate and isobutylmagnesium bromide.

Tenth: Windaus and Trautmann,¹⁷ in a footnote, mention "other provitamins, e. g., 22,23-oxido-ergosterol, which, however, are only feebly active after irradiation."

To correct a somewhat prevalent wrong impression, it may be pointed out that the kind of vitamin D which is produced by irradiating a given provitamin is not determined or even influenced by the conditions of irradiation. For example, from ergosterol, calciferol is the only kind of vitamin D produced. Whether long wavelength, short wavelength or mixed wavelength radiation is employed, as in different commercial processes, the end product is the same as regards the vita-

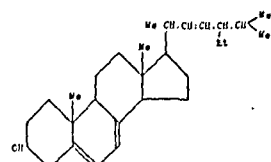


Fig. 16.—7-Dehydro-stigmasterol.

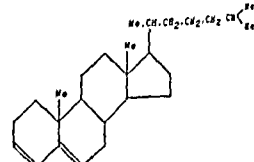


Fig. 17.—Cholesterolene.

min. The only differences are in the relative amounts of by-products, chiefly in the lumisterol and tachysterol, which are unimportant physiologically in the amounts present. Avoidance of the undesirable toxisterol is a matter of choice of solvent and duration of exposure.¹ Processes in which electron bombardment is substituted for ultraviolet irradiation produce the same kind of vitamin D, although they do so inefficiently because of extensive decomposition.²⁵

Little has been said here with regard to the D vitamins of fish oils, which comprise by far the largest source of antirachitic medication for both man and animals. Demethyl-dihydro-calciferol (vitamin D₃), as already stated, appears to be the principal form of vitamin D present. However, the work of Bills, Mas-sengale, Imboden and Hall¹² shows that more than one kind of vitamin D occurs in the liver oils of various species of fish. Even cod liver oil may contain a multiplicity of forms. Progress in separating and identifying the natural vitamins D may be expected from studies now under way in which the molecular distillation technic of Hickman²⁶ is applied to liver oils.

SUMMARY

The properties of vitamin D are exhibited by at least ten different sterol derivatives. Five of these are well understood chemically and five are distinguished by

20. Linsert, O.: Ueber das 7-Dehydro-Stigmasterin, *Ztschr. f. physiol. Chem.* **241**: 125-128 (July 2) 1936.

21. Yoder, L.: The Chemical Activation of Sterols: I. The Nature of the Floridin Activation of Cholesterol, *J. Biol. Chem.* **110**: 71-89 (Nov.) 1936.

22. Stavely, H. E., and Bergmann, W.: The Chemistry of Unsaturated Steroids: I. The Constitution of Cholesterolene, *J. Org. Chem.* **1**: 567-574 (Jan.) 1937.

23. Hathaway, M. L., and Lohb, D. E.: The Provitamin D of Heat-Treated Cholesterol, *J. Biol. Chem.* **113**: 105-110 (Feb.) 1936.

24. Weinhouse, S., and Kharasch, M. S.: Provitamin D Activity and Structure—Addition of Grignard Reagents to 7-Ketocholesteryl Acetate, *J. Org. Chem.* **1**: 490-495 (Nov.) 1936.

25. Hoffman, R. M., and Daniels, Farrington: The Formation of Vitamin D by Cathode Rays, *J. Biol. Chem.* **115**: 119-130 (Aug.) 1936.

26. Hickman, K. C. D.: Molecular Distillation: Apparatus and Methods, *Indust. & Engin. Chem.* **20**: 968-975 (Sept.) 1937.

fragmentary chemical and physiologic differences. The two that are of prime importance are the activation products of ergosterol and 7-dehydro-cholesterol respectively. A few of the others may have some practical significance, though most of them are merely of theoretical interest, illustrating the concept of the multiple nature of vitamin D.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT. HOWARD A. CARTER, Secretary.

OMEGA ELECTROLYSIS MACHINE NOT ACCEPTABLE

Manufacturer: Omega Electrolysis Company, 535 Fifth Avenue, New York.

The Omega Electrolysis apparatus, as the name implies, is designed to remove superfluous hair. It comes in both a portable and a cabinet model. Housed in a custom-built case, the portable unit weighs approximately ten pounds; the larger unit comes in a metal or wood cabinet as desired. Both models contain batteries as a source of energy.

Equipment includes shockproof holders for platinum needles and a support for them, so that a number of depilations may be performed at the same time. A metal cup is used as the indifferent electrode and is attached to the positive pole for operation. The portable model contains outlets for from six to eight needles; the larger models contain from eight to ten. One control lever (attached to the rheostat) and a meter are on the instrument panel. A dry battery, supplying approximately 9.2 volts, supplies current to operate the unit. The construction, underneath the instrument panel, is extremely simple, composed of a switch, meter, rheostat and terminals for the needles. Two bottles, one containing antiseptic and the other a sterilizing fluid, are part of the equipment. Neither of these preparations has been considered or accepted by the Council on Pharmacy and Chemistry.

Treatment procedure consists of inserting the needle into a hair follicle, following the direction of the hair, and applying sufficient current to dissolve the papilla, thus destroying the nutritive source at the root of the hair. This process takes from two to three minutes, depending on the strength of the current as well as the type of hair follicle particular to the individual.

A reliable investigator was appointed by the Council to report on the unit. He tried it out clinically. Although it worked satisfactorily when new, a question was raised as to its durability. A casual inspection of the makeup of the apparatus was convincing proof of the fragility of construction.

Even if it were made satisfactory mechanically, it still could not be acceptable because of the type of advertising matter circulated with it. This extols the merits of electrolysis, making the procedure appear to be very simple whereas in reality it should be attempted only by competent, trained physicians or specialists working under the supervision of a physician. The inexperienced operator is not apt to apply aseptic technic. As a consequence, infection and serious disfigurement may result.

The advertising matter is written to appeal to the beauty shop operator and the untrained technician. An "Omega Method" for becoming an expert "electrologist" is advertised, outlining the type of instruction given and offering a certificate to any one completing the course, either by home study or at the dealer's office. No evidence was presented to indicate that the instruction was given by qualified physicians trained in this branch of medicine.

The Council on Physical Therapy voted not to include the Omega Electrolysis machine in its list of accepted devices on the basis of an advertising policy detrimental to the public welfare.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

AMINOACETIC ACID (See New and Nonofficial Remedies, 1938, p. 51).

Aminoacetic Acid-Mallinckrodt.—A brand of aminoacetic acid-N. N. R.

Manufactured by Mallinckrodt Chemical Works, St. Louis.

ANAEROBIC ANTITOXIN (See New and Nonofficial Remedies, 1938, p. 383).

Mulford Biological Laboratories, Sharp & Dohme, Philadelphia and Baltimore.

Gas-Gangrene Antitoxin (Combined) Concentrated.—An antitoxic serum prepared by immunizing horses with the toxins of *B. perfringens* (*Clostridium welchii*) and *Vibrio septique* (*Cl. oedematis maligni*). After the desired potency is obtained, the horses are bled aseptically, the plasma is separated, and the antitoxin concentrated by a method which is similar to that used for concentrated diphtheria and tetanus antitoxin. The unitage is determined according to the method prescribed by the National Institute of Health. Marketed in packages of one syringe containing 10,000 units each of perfringens antitoxin and *Vibrio septique* antitoxin.

Dosage.—Therapeutic: The initial injection of the contents of one syringe preferably by the intravenous route, followed by the intramuscular or intravenous administration of repeated doses as indicated by the condition and symptoms of the patient.

Gas-Gangrene Antitoxin (Combined) Unconcentrated.—An antitoxic serum prepared by immunizing horses with the toxins of *B. perfringens* (*Cl. welchii*) and *Vibrio septique* (*Cl. oedematis maligni*). After the desired potency is obtained the horses are bled, and the serum is separated and prepared in a manner similar to other unconcentrated antibacterial and antitoxic serums. The unitage is determined according to the method prescribed by the National Institute of Health. Marketed in bottles containing 10,000 units each of perfringens antitoxin and *Vibrio septique* antitoxin.

Dosage.—Therapeutic: The initial injection of the contents of one bottle, preferably by the intravenous route, followed by the intramuscular or intravenous administration of repeated doses as indicated by the condition and symptoms of the patient.

POLLEN EXTRACTS-ABBOTT (See New and Nonofficial Remedies, 1938, p. 48).

The following dosage form has been accepted:

Mixed Grass Pollen Extract, Decimal Dilution Set: A mixture of equal parts of June grass, timothy, orchard grass, redtop, and sweet vernal grass pollen extracts, marketed in packages of five vials containing respectively, 5 cc. of a 1:100,000 dilution (10 pollen units per cubic centimeter), 5 cc. of a 1:10,000 dilution (100 pollen units per cubic centimeter), 5 cc. of a 1:1,000 dilution (1,000 pollen units per cubic centimeter), 5 cc. of a 1:100 dilution (10,000 pollen units per cubic centimeter), and 0.5 cc. of a 3 per cent dilution (30,000 pollen units per cubic centimeter).

RHUS TOX. ANTIGEN-STRICKLER (See New and Nonofficial Remedies, 1938, p. 369).

The Mulford Colloidal Laboratories, Philadelphia.

Rhus Tox. Antigen-Strickler: Also marketed in packages of two 1 cc. syringes.

RHUS VENENATA ANTIGEN-STRICKLER (See New and Nonofficial Remedies, 1938, p. 369).

The Mulford Colloidal Laboratories, Philadelphia.

Rhus Venenata Antigen-Strickler: Also marketed in packages of two 1 cc. syringes.

VIOSTEROL IN OIL (See New and Nonofficial Remedies, 1938, p. 482).

Viosterol (A. R. P. I. Process) in Oil-Hospital Liquids, Inc.—A brand of viosterol in oil-N. N. R.

Manufactured by the American Research Products, Inc., a subsidiary of General Mills, Inc., Minneapolis, under license agreement with E. I. du Pont de Nemours & Co. U. S. patent applied for. (Hospital Liquids, Inc., distributor.)

Viosterol (A. R. P. I. Process) in oil (Hospital Liquids, Inc.) is prepared by the activation of purified ergosterol by low velocity electrons. The activated ergosterol is refined and dissolved in vegetable oil. The final product, when assayed according to U. S. P. method, has not less than the vitamin D potency of viosterol in oil-N. N. R.

DEXTROSE (See New and Nonofficial Remedies, 1938, p. 162).

Wm. S. Merrell Company, Cincinnati.

The following dosage form has been accepted:

Ampoules Solution Dextrose 50%, 100 cc.: Each ampule contains 100 cc. of a sterile aqueous solution containing 50 Gm. of dextrose-U. S. P.

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SATURDAY, JUNE 25, 1938

TISSUE PREPAREDNESS FOR THE PRODUCTION OF SPECIFIC ANTIBODIES

In the past it has been presumed by some immunologists that the fixed tissues are autonomous in production of specific antibodies. Recent investigations indicate, however, that antibody production is further dependent on unknown hormonal or neurologic integrations.

Scores of unsuccessful attempts have been made to produce specific antibodies by adding antigens to tissue cultures. In spite of the few allegedly successful results the general consensus is that explants from the spleen, lungs and bone marrow of embryonic or adult laboratory animals are incapable of synthesizing precipitins, agglutinins, hemolysins, antitoxins or complement-deviating antibodies.¹

Admitting these failures, recent investigators have modified the *in vitro* technic. They have injected antigens intravenously into experimental animals and after arbitrary intervals made tissue cultures from antigen-laden spleen or bone marrow. Landsteiner and Parker² of the Rockefeller Institute, for example, found that antigen-laden splenic fragments taken from rabbits injected from one to twenty-four hours previously with guinea pig erythrocytes failed to produce specific antibodies. If, however, an interval of from two to three days was allowed between the intravenous injection and the removal of the antigen-laden splenic fragment, agglutinins of relatively high titer were synthesized or secreted by the resulting tissue culture. Dr. Tsai³ of the Microbiological Institute, Imperial University, Kyoto, reports a similar synthesis or secretion of diphtheria antitoxin *in vitro* by antigen-laden splenic tissues, removed from forty-eight hours to five days after intravenous injection of diphtheria toxin or toxoid.

Observations of this type seem to indicate that the production of antibodies by fixed tissues depends on certain wholly unknown preparatory reactions in the

intact animal. These reactions are usually not completed until the second or third day after the intravenous injection of antigen. Landsteiner and Parker found that splenic fragments taken from animals given injections twenty-four hours previously, when cultivated in fully prepared serum, *i. e.*, serum taken from control rabbits given injections three days previously, also fail to produce antibodies. From this they argue that serologic preparedness alone is insufficient; the splenic tissues themselves apparently must undergo a supplementary *in vivo* preparation.

These investigations seem to signify that production of specific antibodies can no longer be considered an autonomous function of fixed tissue cells but is rather a function of the body as a whole, working through local tissue preparedness for synthesis of antibodies. No one has yet attempted to formulate a theory as to the nature of this tissue preparedness, but knowledge of the nutritional, hormonal or neurologic factors involved may have important clinical applications.

EPIDEMICS IN ENGLISH SCHOOLS

The great majority of English boys and girls receive their education in nonresidential schools; for this reason the maintenance of health in such schools is of preponderating practical importance. Twenty-one boys' schools and ten girls' schools agreed to participate in a statistical inquiry,¹ and investigation was begun in the Lent term of 1930. Although all large boarding schools cooperating are organized on the "house" system, the suggested uniformity of organization and environmental conditions does not actually exist. Great differences in house organization are found, especially in the boys' schools, while standards of accommodation vary not only between different schools but between different houses in the same school. These variations complicate epidemiologic questions to the extent that renders comparative discussion extremely difficult; nevertheless certain of the observations are definitely worth recording. The extensive study of nasopharyngeal infections and sore throats for example leads to the practical conclusion that, although an unusual incidence of sore throats should authorize vigilance with regard to the possible appearance of scarlet fever, otitis media or rheumatism, a low incidence of such infections is no guaranty of freedom from risk from these more serious diseases.

Knowing that the environmental conditions in girls' schools differ considerably from those of most boys' schools, the data from each were kept separately. It soon became obvious that the two populations, male and female, were being subjected to different influences which were reflected in the attack rates of nasopharyngeal infection. Such infections were much higher among the girls than among the boys, but, since the

1. Salle, A. J., and McOmie, W. A.: *J. Immunol.* 33: 157 (Feb.) 1937.

2. Parker, R. C.: *Science* 65: 292 (March 19) 1937.

3. Tsai, L. H.: *J. Immunol.* 33: 471 (Dec.) 1937.

1. *Epidemics in Schools*, Privy Council Medical Research Council Special Report Series, No. 227, London, 1938.

records were limited to sickness causing at least one day's absence from school, two alternative explanations were possible: the girls may have been actually more susceptible to such infections or they may have been subjected to a stricter surveillance and on that account more likely to be kept out of school. It is perhaps not surprising that when the "common cold" and influenza were made into a single group of "nasopharyngeal infections" this group accounted for 53 per cent of all the time lost on this account among girls and for 43 per cent among boys. While it is possible that active methods of immunization against influenza may serve to cut the time lost from this cause, no promising method of immunization against colds has as yet become available.

Another interesting aspect of the report was that dealing with the relation between chickenpox and herpes zoster. Investigation showed that in eighteen out of twenty cases when zoster preceded chickenpox the first patient with chickenpox might, from the point of view of time, have been infected by a patient with zoster. When further examined, there seemed to be a suggestion that when zoster was the infecting agent the resulting attack rate of chickenpox was almost always small, whereas when chickenpox appeared first there was a greater chance of the disease spreading, although exceptions to both rules occurred. Evidence was not found, however, that chickenpox conferred immunity against zoster. The data on influenza showed (with the exception of one school) that there was no evidence of an actively acquired immunity lasting for as long as one year. In fact, in the pairs of epidemics analyzed, those who had influenza one year were more rather than less likely to contract it the following year in comparison with those who had escaped the first epidemic.

The examination of the record cards of the entire group at the beginning of the inquiry in 1930 showed that just over half the boys and just under half the girls had had their tonsils removed. These proportions rose slowly until, at the end of 1934, they had increased by almost 6 and 7 per cent respectively. The incidence of nasopharyngeal infections was studied in relation to this procedure. When the preoperative and postoperative history of the group of 364 boys whose tonsils were removed during school life were studied it was found that, whereas before tonsillectomy the attack rates from nasopharyngeal infection and time lost were appreciably higher than the average, after tonsillectomy these rates approximated closely the expected. Evidence was not obtained, however, that tonsillectomy resulted in a diminution in incidence of nasopharyngeal infections. The report concludes: "Though realizing the value of the operation in carefully selected cases, we have grave doubts as to whether the majority of tonsillectomies performed today are the result of true discrimination, rather than of routine ritual."

Although many other important epidemiologic problems are discussed, the report is careful to state that its main purpose is to formulate the epidemiologic problems needing study and solution rather than to draw extensive practical conclusions from a study which they still consider of a preliminary nature. Nevertheless the fund of information assembled can be considered a fundamental contribution to a subject of immense potential practical importance.

VITAMIN C AND COMPLEMENT

The factors governing the amount of complement in the blood of animals, especially the guinea pig, have long been obscure. Observations have been reported relating variations in complement to seasonal changes, disease and diet. Among these the last has received increasing attention; it has been suggested that vitamin C intake is of major importance in determining the complement titer. The evidence on this point, however, has not been conclusive. Recently Ecker and his associates¹ at Western Reserve University have reported extensive studies on the relation of vitamin C to complement. Many of the investigations on complement titer have been complicated by the difficulty of determining accurately the amount of this agent in a given sample of blood.^{1a} In titrating complement, washed sheep erythrocytes and heated antiserum (obtained by injecting rabbits with sheep cells) are mixed, and the minimal amount of unheated guinea pig serum which must be added in order to cause complete hemolysis is determined. However, as several authors have indicated, it is impossible by this method to determine with any great degree of accuracy the amount of complement in guinea pig serum. Accordingly, Ecker and his collaborators used two methods of titration for their samples, one proposed by Koopman and Falker,² in which the minimal amount of serum necessary to initiate hemolysis is determined, and the other suggested by Brooks,³ in which the amount of serum necessary to hemolyze 50 per cent of the erythrocytes is estimated. The amount of vitamin C in the blood was determined chemically.

Using these procedures, the Cleveland investigators showed a definite correlation between the amount of vitamin C in guinea pig serum and the complement titer.^{1a} Animals on a scorbutigenic diet showed a diminution in amount of complement parallel with the decrease in vitamin C content of the serum. The

1. (a) Ecker, E. E.; Pillemer, L.; Wertheimer, D., and Gradis, H.: Ascorbic Acid and Complement Function, *J. Immunol.* **34**: 19 (Jan.) 1938. (b) Ecker, E. E.; Pillemer, L., and Wertheimer, D.: Complementing Activity and Ascorbic Acid Content of Guinea Pig Serums Following Ether Anesthesia, *ibid.*, p. 39; (c) The Effect of Ascorbic Acid on the Constitution of Complement, *ibid.*, p. 45. (d) Ecker, E. E.; Pillemer, L.; Martensen, E. W., and Wertheimer, D.: Complement Activity as Influenced by Certain Chemical Agents, *J. Biol. Chem.* **123**: 351 (March) 1938; (e) Complement Function as Influenced by Szent-Györgyi's Hexoxidase, *ibid.*, p. 359.

2. Koopman, J., and Falker, I. D.: More Sensitive Complement Fixation Test for Gonorrhea, *J. Lab. & Clin. Med.* **21**: 308 (Dec.) 1935.

3. Brooks, S. C.: Precise Titration of Complement, *J. M. Research* **41**: 399 (May) 1920.

feeding of ascorbic acid to scorbutic animals increased the complement titer. Similarly, the addition of crystalline vitamin C to serums deficient in complement increased the titer to normal and also rendered these serums more stable. The optimum level of vitamin C was found to be about 1 mg. in 100 cc. of serum. When the content of ascorbic acid was increased beyond this level no further effect developed on the complement activity. Ascorbic acid itself is not identical with complement, though it is essential to the activity of this factor in immunity. As Ecker and his collaborators found, crystalline vitamin C "will not hemolyze sensitized cells either by itself or in the presence of inactivated serum."^{1a}

Complement that has been inactivated by certain procedures, such as prolonged shaking or treatment with ammonia, cannot be regenerated by addition of vitamin C.^{1c} However, denaturation of complement by yeast or inactivation by aeration^{1c} or by the addition of minute amounts of iodine, hydrogen peroxide or other substances^{1d} may be reversed with ascorbic acid.

The mechanism whereby vitamin C affects complement function appears to be related to its reducing capacity. Glutathione, like ascorbic acid a physiologic reductant, appears also to be implicated in the reducing system affecting the complement activity of blood.^{1e} Further, the Western Reserve investigators have found that inorganic reducing agents, such as hydrogen sulfide and sodium hydrosulfite ($\text{Na}_2\text{S}_2\text{O}_4$), can activate complement.^{1d}

The fundamental work of Ecker and his collaborators has thus added an important chapter to knowledge of the biochemical basis of immune reactions.

Current Comment

PNEUMOCOCCUS POLYSACCHARIDE IN URINE

Urinary excretion of the specific capsular substances formed by pneumococci is of little or no diagnostic value, owing to the inconstant excretion of this substance during the early stages of lobar pneumonia. Cruickshank¹ of the University and Royal Infirmary, Glasgow, Scotland, however, believes that detection of the type-specific polysaccharide in the urine is a valuable prognostic index, the mortality among patients with "pneumococcosuria" being twenty times greater than that of pneumonia patients whose urine remains free from this polysaccharide during the course of the disease. Cruickshank's conclusions were drawn from his study of about 200 patients with pneumococcal infections, 184 of whom were suffering from lobar pneumonia. Type polysaccharides were estimated quantitatively in the urines of these patients by means of high titer type-specific antisera. The serum used in most of his tests was capable of detecting homologous pneumococcus polysaccharide in dilutions as high as 1:5,000,000. The daily output of type pneumococcosuria

in some of his cases was as high as from 3 to 30 mg. The mortality of his patients with type I or II polysaccharide excretion was about 40 per cent. The mortality among lobar pneumonia patients with polysaccharide-free urines was only 2 per cent. In a certain number of cases with delayed resolution the specific polysaccharide continued to be excreted for from twenty-five to forty days during convalescence, presumably as a result of the gradual dissociation of the pneumococcus hapten from its combination with humoral or intracellular antibodies. Whether or not urinary excretion of pneumococcus specific substances is a physiologic process or a pathologic process due to toxic injury to the kidney epithelium has not been determined. If, however, pneumococcosuria is a reliable prognostic index as Cruickshank believes, it may be a valuable guide to a rational therapy in lobar pneumonia. Cruickshank suggests that specific serum therapy should be limited to patients with positive pneumococcus polysaccharide in the urine.

EFFECT OF CHILDHOOD ILLNESSES ON GROWTH

The opinion prevails that children who are frequently ill are "stunted" in their growth and unlikely to develop normally. The possible effects of recurrent illnesses on the physical growth of a group of normal boys and girls has now been investigated by Hardy.¹ The group was representative in socio-economic status, national origins and general intelligence of pupils in regular attendance in the public schools of an industrial urban community in the Middle West. The criteria of selection were principally dependent on the willingness of the parents to cooperate. Cumulative health histories were built up from information obtained in the home and records on file in the school office. Yearly interviews were held with the mother before the child was examined, and histories of the types and character of the illnesses were carefully checked. In general, the health histories obtained are believed to present a reasonably accurate account of all serious and prolonged illnesses during infancy and childhood. The types of illness included many of the rare as well as the ordinary childhood diseases. The incidence of illnesses during the first twelve years of life ranged from one to sixteen, exclusive of colds and rickets. The average number of illness episodes reported per child was six, with 13 per cent having had a history of nine or more illnesses and 14 per cent of three or fewer illnesses during infancy and childhood. Growth records were based on repeated measurements for eighteen physical traits on 218 boys and 197 girls from 7 to 12 or 13 years of age, taken without clothing by anthropometrists of the McCormick Fund. Final measurements also on 165 boys and 124 girls to 20 years of age were recorded. Evidence was not obtained of any general relation of illness histories to either rate of growth during middle and late childhood or size at maturity. The correlation gave no suggestion of any permanent deleterious effect of frequent sickness per se.

1. Hardy, Martha C.: *Frequent Illness in Childhood, Physical Growth and Final Size*, *Am. J. Phys. Anthropol.* 23:241 (Jan.-March) 1932.

1. Cruickshank, Robert: *J. Path. & Bact.* 46:67 (Jan.) 1935.

FOURTH OF JULY INJURIES

Last year the American Medical Association resumed its annual summary of the injuries resulting from the celebration of the Fourth of July. In 1937 twenty deaths resulted from fireworks and firearms; two cases of tetanus occurred and there were 7,205 injuries. With the Fourth again imminent, unnecessary carnage already has begun to appear, one of the Chicago papers for June 16 carrying a report of a 7 year old boy who suffered severe burns of the face from placing a firecracker which he had found in the yard in his mouth to "smoke it." Again the cooperation of hospitals throughout the country has been requested to assist in carrying to the public consciousness the dangerous and unnecessary hazard of allowing fireworks to be sold indiscriminately.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION AND PUBLIC HEALTH.)

ALABAMA

Society News.—Dr. Samuel L. Ledbetter, Birmingham, discussed "Preoperative and Postoperative Treatment of Goiter" before the Calhoun County Medical Society in Anniston recently.—Dr. Edward C. Rosenow, Rochester, Minn., among others, addressed the annual meeting of the Alabama Dental Association in Birmingham, recently, on "Elective Localization of Streptococci and the Relationship of Dental Sepsis to General Health."—The Jefferson County Medical Society was addressed in Birmingham, recently, by Dr. Albert Graeme Mitchell, Cincinnati, on "Commonplace Endocrine Problems of Childhood." Dr. Hugh H. Young, Baltimore, discussed the removal of adrenal tumors before the society recently and Dr. Edgar W. Davis, Washington, D. C., on the scope of thoracic surgery.—Ernest C. Faust, Ph.D., professor of parasitology and member of the department of tropical medicine, Tulane University of Louisiana School of Medicine, New Orleans, gave the annual guest lecture of the Mobile Academy of Science, May 4, on "Malaria, with Special Reference to Its Epidemiology, Geographic Distribution and Prevalence in the Southern United States."

CALIFORNIA

Hospital News.—A bond issue was recently approved to finance the construction of a wing to the Palo Alto Hospital, on the campus of Stanford University. The new unit will provide eighty additional beds, doubling the present capacity of the hospital.

Personal.—Dr. Joseph M. Brown has been appointed health officer of Ferndale to succeed Dr. Oliver B. Barron and Harry W. Pasley of Reedley, succeeding Dr. Roy E. Allen.—The degree of doctor of laws was conferred on Dr. Jacob C. Geiger, director of public health of San Francisco, by the University of Santa Clara at its commencement June 4.

CONNECTICUT

Dr. Ross Harrison Retires.—Dr. Ross G. Harrison, since 1927 Sterling professor of biology, Yale University School of Medicine, New Haven, retired from active teaching at the end of the academic year. A dinner was held in his honor May 29 at the Osborn Zoological Laboratory, of which he is director. Born in Germantown, Pa., Jan. 13, 1870, Dr. Harrison received a degree of doctor of philosophy at Johns Hopkins University School of Medicine, Baltimore, in 1894, and a medical degree at the University of Bonn in 1899. He lectured in morphology at Bryn Mawr College, 1894-1895; taught anatomy at Johns Hopkins from 1896 to 1907, becoming in this year professor of comparative anatomy, a position he held until 1927 when he was appointed Sterling professor of biology at Yale. He has been managing editor of *The Journal of Experimental*

Zoology since 1906. Societies of which he has been president include the American Society of Zoologists, 1924; American Association of Anatomists, 1912-1913; Anatomische Gesellschaft, 1934-1935, and the American Society of Naturalists. In 1914 he was awarded the Archduke Rainer medal of the Imperial Royal Zoological Botanical Society of Vienna. He has also been given the John Scott Medal and premium by the city of Philadelphia "for the invention of devices for tissue grafting and for tissue culture."

DELAWARE

Society News.—Dr. Francis C. Grant, Philadelphia, addressed the New Castle County Medical Society in Wilmington May 17 on "Diagnosis and Treatment of Spinal Cord Tumors." Dr. George Wilson, Philadelphia, discussed "Insulin in Mental Disease" at a meeting of the society April 19 and Dr. Richard Carmichael Tilghman, Baltimore, addressed the society recently on "Heart Disease in Pregnancy."

GEORGIA

New Superintendent at Hospital.—Dr. Ralph E. Porter, superintendent of the U. S. Marine Hospital, Fort Stanton, N. M., since 1934, has been appointed to a similar position at the marine hospital in Savannah. He succeeds Dr. Joseph S. Bolten who has been assigned to Washington. Dr. Porter has been associated with the U. S. Public Health Service since 1916.

Refresher Courses in Dentistry.—Walter C. McBride, D.D.S., Detroit, Mich., opened a series of refresher courses in children's dentistry under the auspices of the state department of health and the Georgia Dental Association. The following centers were selected for the lectures: Albany, May 23; Waycross, May 24; Swainsboro, May 25; Athens May 26, and Rome, May 27.

ILLINOIS

Spotted Fever.—Two cases of Rocky Mountain spotted fever have been reported in Marshall County thus far this year, one of which was fatal, newspapers reported June 15. The disease was first reported in Illinois in 1934. In 1935 there were five cases and six each in 1936 and 1937.

Chicago

Society News.—The Chicago Society of Allergy was addressed May 16 by Drs. Rudolph H. Hecht and Ben Z. Rappaport on "Infantile Eczema from the Viewpoint of the Allergist" and Tell Nelson, "Antigenicity of Horsehair."—The Chicago Roentgen Society was addressed May 12, among others, by Drs. Isador S. Trostler on "A Slipped Sacro-Iliac Joint" and Louis J. Tint, "X-Ray Findings in Sciatica."—At a meeting of the Chicago Ophthalmological Society, May 9, Drs. Harry W. Woodruff, Joliet, spoke on "Epithelial Corneal Graft for Recurrent Pterygium" and Agnes Beulah Cushman showed pictures of the International Congress of Ophthalmology at Cairo.—Dr. Melvin S. Henderson, Rochester, Minn., addressed the annual meeting of the Chicago Orthopaedic Society June 10 on "Use of Bone Grafts in Ununited Fractures of the Neck of the Femur" and Dr. Samuel Kleinberg, New York, "Slipping of the Femoral Capital Epiphysis."—A symposium on tuberculosis was presented before the German Medical Society of Chicago June 7 by Drs. Henry C. Swcany, Frederick Gruneck, George C. Turner and Richard M. Davison.

INDIANA

Personal.—Dr. Arthur W. Records has been appointed a member of the Franklin board of health to succeed the late Dr. Daniel R. Saunders.—Dr. James M. Hicks Jr., Huntington, has been appointed a member of the state board of medical examiners succeeding the late Dr. Leslie C. Sammons, Shelbyville. He will serve until 1941.—Dr. Henry F. Beckman, professor of obstetrics, Indiana University School of Medicine, Indianapolis, was presented with the annual award of merit of the Northwestern University Alumni Association in Indianapolis.

New Clinical Building at Medical School.—The new six story clinical building of the University of Indiana School of Medicine, Indianapolis, was dedicated May 14. The unit cost more than \$600,000 and was partly financed by the PWA. The speakers at the dedicatory program included Dr. Dean Lewis, professor of surgery, Johns Hopkins University School of Medicine, Baltimore, whose subject was "Teaching the Medical Students How to Reduce the Cost of Medical Care"; Gov. M. Clifford Townsend; Herman B. Wells, A.M., president of

Indiana University; William Lowe Bryan, LL.D., president emeritus, and Dr. Willis D. Gatch, dean of the medical school. Enlarged facilities for the treatment of cancer are a feature of the new building.

IOWA

Personal.—Dr. Russell R. Hansen has been appointed health officer of Storm Lake, succeeding Dr. Edgar F. Smith who recently resigned after holding the position for eight years.—At a dinner held in honor of Dr. John H. Hovenden's completion of forty years of practice in Laurens, he was presented with a watch.—Dr. Charles V. Edwards, Council Bluffs, has been appointed assistant professor of obstetrics at Creighton University School of Medicine, Omaha.

Society News.—Dr. James H. Means, Boston, discussed "Medical Aspects of Preoperative and Postoperative Care" before the Linn County Medical Society, Cedar Rapids, May 26; Dr. Loyal Davis, Chicago, spoke on "Surgical Treatment of Peripheral Nerve Injuries" before the society recently.—Dr. Samuel M. Feinberg, Chicago, discussed "Summer Allergy" before the Clinton County Medical Society at Clinton May 5.—Drs. Harold J. McCoy spoke on "Hereditary Ocular Defects with Blindness" and Harry C. Willett, "Instability of the Neurovascular System as an Etiological Factor in Dermatitis" at a meeting of the Des Moines Academy of Medicine and the Polk County Medical Society recently.

LOUISIANA

Personal.—Dr. Theodore J. Dimitry, professor of ophthalmology, Louisiana State University Medical Center, New Orleans, has been appointed chairman of a monument committee to develop New Orleans as a city of monuments. It is planned to beautify the city's grounds with appropriate monuments, making Tulane Avenue the medical avenue of the city.—Dr. Edwin A. Socola has been promoted to clinical professor of pediatrics at Louisiana State University Medical Center, New Orleans, and Dr. Athol S. Kenney, assistant professor of pediatrics.

MARYLAND

Society News.—The Maryland Academy of Medicine and surgery was addressed in Baltimore recently by Drs. Edward A. Looper on "Diagnosis and Treatment of Infections of the Nasal Accessory Sinuses" and William H. Toulson, "Some Aspects of Genito-Urinary Tuberculosis."

Library Association's Lecture on Dentistry.—Dr. George G. O'Brien, assistant clinical professor of medicine, Loyola University School of Medicine, Chicago, delivered the second annual lecture of the Clarence F. Grieves Library Foundation of the Maryland State Dental Association recently in Baltimore; his subject was "Arthritis and Its Relation to Dentistry."

MASSACHUSETTS

Hospital Observes Twenty-Fifth Anniversary.—At a three day celebration May 5-7 the Peter Bent Brigham Hospital, Boston, observed its twenty-fifth anniversary in conjunction with a reunion of the graduates of the professional and nursing services of the hospital. The speakers included Gov. Charles F. Hurley; Mayor Maurice J. Tobin; Drs. Dean Lewis, Baltimore; Henry A. Christian, Elliott C. Cutler and Charles Sidney Burwell, Boston.

MICHIGAN

Meeting on Industrial Hygiene.—The Michigan Society of Industrial Hygiene held a dinner meeting at the Detroit-Leland Hotel, Detroit, May 25, and presented a symposium on the state, legal, engineering and medical aspects and current problems of industrial hygiene.

Hospital News.—A \$160,000 building is nearing completion at Ypsilanti State Hospital for occupational therapy facilities. About 1,200 patients will benefit because 700 patients of the total at the hospital are now and will continue to be engaged in farming, carpentry, institutional laundering, house-keeping, kitchen work and grounds maintenance, it was stated.

Physician Mayors.—The following physicians have been elected mayors of the places indicated, according to the state medical society:

Dr. Thomas E. DeGurse, Marine City.
Dr. Frank V. Carney, St. Clair.
Dr. Arnold R. Miller, Harrisville.
Dr. Alden G. Sheets, Eaton Rapids.
Dr. Buell H. Van Leuven, Petoskey.

County Society Honors Past Presidents.—The Wayne County Medical Society honored its living past presidents at a meeting May 16 in Detroit. Keys containing miniature gavels wrought in gold were presented to the twenty-five living past presidents and a plaque was unveiled by Dr. Alexander W. Blain in memory of Dr. Arthur D. Holmes. Dr. Clarence E. Umphrey, the immediate past president, was given a silver tea service by the general membership.

Society News.—Dr. Clair Fremont Vale, Detroit, recently discussed "Cancer of the Stomach" before the Jackson County Medical Society, Jackson.—The Genesee County Medical Society was addressed May 4 by Drs. Andrew C. Ivy and Latham A. Crandall Jr., both of Chicago, on "Clinical Aspect of the Physiology of the Gallbladder" and "Problem of Vitamins and Their Clinical Uses."—Dr. Michael L. Mason, Chicago, addressed the Muskegon County Medical Society in Muskegon May 22 on "Management of Open Wounds." Dr. Harold L. Morris, Detroit, addressed the society June 17 on "Pyelitis of Pregnancy."

MINNESOTA

State Medical Meeting at Duluth.—The eighty-fifth annual session of the Minnesota State Medical Association will be held at the Hotel Duluth, June 29-July 1. Dr. James M. Hayes, Minneapolis, will deliver the presidential address on "Medical Problems in Minnesota." Out-of-state speakers will include:

Dr. Irvin Abell, Louisville, Ky., Carcinoma of the Colon and Rectum.
Dr. Roland S. Cron, Milwaukee, Wis., Uterine Malignancy.
Dr. Howard W. Haggard, New Haven, Conn., Recent Advances in Medicine and Their Social Significance.
Dr. Philip Lewin, Chicago, The Foot and Ankle—Their Discomforts—Deformities and Disabilities.
Dr. Karl A. Meyer, Chicago, Recent Advances in the Treatment of Burns.
Dr. Eli K. Marshall Jr., Baltimore, Sulfanilamide in Bacterial Infections.
Dr. Charles Anderson Aldrich, Winnetka, Ill., Some Practical Points in the Management of Nephritic Children.
Dr. Edward Jackson, Denver, Recognition and Treatment of Refractive Errors in Children.

The first Herman M. Johnson Memorial Lectureship will be delivered Friday by Gov. Elmer A. Benson. Dr. Haggard will address the annual banquet Thursday evening; he will also address the public health meeting at the Orpheum Theater together with Dr. Abell. Dr. Hollis E. Potter, Chicago, will deliver the Russell D. Carman Memorial Lecture Wednesday afternoon on "The Diagnostic Roentgenology of Adult Pulmonary Tuberculosis with a New Suggestion as to Group Survey." The Southern Minnesota Medical Association will present its annual gold medal for the best scientific exhibit Thursday evening. The Minnesota Academy of Ophthalmology and Otolaryngology will hold a special dinner meeting at the Kitchi Gammi Club Friday in honor of Dr. Jackson who plans to give a course of lectures at St. Mary's Hospital, June 30-July 2, under the academy's auspices, on "Practical Aspects of Physiological Optics in Refraction." The annual golf tournament will be held Saturday morning at the Northland Country Club.

MISSISSIPPI

Health Officer Goes to Oklahoma.—Dr. John W. Shackelford, for eight years director of the Washington County health department, has resigned to become director of the technical field unit and serve as advisory officer for health units with the Oklahoma State Department of Health. He will begin his new work August 15, it was reported. Dr. Shackelford graduated at Tulane University of Louisiana School of Medicine, New Orleans, in 1926. He will be succeeded as county health officer by Dr. George W. Mast, Lexington, who now holds a similar position in Holmes County.

MISSOURI

Society News.—Dr. William W. Buckingham, Kansas City, discussed "Indications for Collapse Measures in Pulmonary Tuberculosis" before the Jackson County Medical Society May 24.—Dr. Hiram Winnett Orr, Lincoln, Neb., addressed the Buchanan County Medical Society in St. Joseph recently on "Prevention and Control of Infection in Injuries to Bones and Joints."—Dr. William A. Hudson, Detroit, addressed a joint meeting of the Trudeau Club of St. Louis and the St. Louis Medical Society recently on "Collapse Therapy—Its Principles and Application in the Treatment of Pulmonary Tuberculosis."—At a meeting of the Kansas City Society of Ophthalmology and Otolaryngology recently the speakers included Drs. De Forrest C. Jarvis, Barre, Vt., on "Value of 3-Unit Doses of Insulin in Ophthalmology and Otolaryngology" and "Applied Body Chemistry in Ophthalmology and

Otolaryngology," and James W. White, New York, "Method of Checking Muscle Imbalance" and "Convergence Insufficiency with a Vertical Imbalance."

MONTANA

Personal.—Dr. Byron L. Pampel, Livingston, has been named superintendent of the state hospital at Warm Springs. —Dr. Enoch M. Porter, Great Falls, was elected president of the state board of health at its recent meeting in Helena.

NEVADA

Plague Infection.—Plague infection has been found in fleas collected from Mohave Desert wood rats in Clark County: from rats trapped April 14, 14½ miles northwest of Las Vegas; from rats trapped April 18, 14 miles northwest of Las Vegas; from rats trapped April 19, 17 miles northwest of Las Vegas; from rats trapped April 20, 21 miles northwest of Las Vegas; from rats trapped April 21, 23 miles northwest of Las Vegas; from rats trapped April 22, 17 miles northwest of Las Vegas.

NEW JERSEY

Public Health Week.—The Bergen County Medical Society sponsored a public health week program May 7-14. The publication of a special medical section in the *Bergen Evening Record* opened the week's program. Other features included health movies, exhibits and lectures, and an x-ray clinic for Negroes. The section in the *Evening Record* contained sixteen pages of articles written by physicians and dentists, reproductions of pictures of members of the county medical society and advertisements.

Society News.—The Bergen County Council of Social Agencies sponsored a one day institute on welfare problems in Hackensack May 23. —At a meeting of the Essex County Medical Society in Newark recently, Dr. Thomas A. Shallow, Philadelphia, discussed "Carcinoma of the Thyroid Gland." —Dr. John H. Gunter, Philadelphia, addressed the Gloucester County Medical Society on "Dental Problems of Interest to Physicians." —At a meeting of the Passaic County Medical Society in Passaic recently, Dr. S. Bernard Wortis, New York, read a paper by Dr. Foster Kennedy, New York, on "Allergy in Nervous and Mental Disease." —At the second annual meeting of the New Jersey Association of School Physicians in Atlantic City May 20 one session was devoted to a discussion of childhood tuberculosis with the following speakers: Drs. Berthold S. Pollak, Secaucus; Max Horn, Newark, and Irving L. Applebaum, Newark. Other speakers were Drs. Aaron H. Horland, Newark, on "The School Physician as the Representative of Organized Medicine in the Public Schools" and Harry B. Silver, Newark, "Our Relation to the State Medical Society."

NEW YORK

Consultants to Police Department.—A police scientific staff, composed of sixteen members, has been formed in Buffalo to serve as consultants to the local police. It is under the supervision of the police commissioner and five rooms are provided in police headquarters to house the ballistic, chemical and photographic laboratories and the rooms necessary for the polygraph. Meetings are held at regular intervals and all members are subject to call as the necessity arises. The following are members:

Dr. Charles W. Bethune, moulage expert.
C. Merrill Brown, M.A., microchemist.
Dr. John Burke, medical photographer.
Dr. William F. Burke, polygraph expert.
G. H. Cartledge, Ph.D., inorganic chemist and spectroscopic analysis.
Dr. Rocco N. De Dominicis, pathologist.
Dr. Karl F. Eschelman, firearms identification and ballistics.
Aaron A. Goldstein, librarian and secretary.
Dr. Charles E. Long, medical examiner.
William F. Payne, microscopic photography and x-ray.
Edward J. Powers, city chemist.
M. C. Rinhardt, M.A., physicist.
Clifford E. Rose, D.D.S., cryptography and dental identification.
Dr. Harry M. Steen, pathology and biochemistry.
A. P. Sy, Ph.D., toxicologist.
Dr. Victor A. Tyrasinski, police surgeon.

New York City

Dr. Cannon Delivers Welch Lectures.—Dr. Walter B. Cannon, George Higginson professor of physiology, Harvard University Medical School, Boston, delivered the William H. Welch Lectures at Mount Sinai Hospital in May; his subjects were "Some New Aspects of Homeostasis" and "The Aging of Homeostatic Mechanisms."

Appointments to New York Polyclinic.—The following have been appointed to the New York Polyclinic Medical School and Hospital:

Dr. Joseph F. McCarthy, professor of urology and attending urologist.
Dr. Charles J. Imperatori, professor of otolaryngology and attending otolaryngologist.

Dr. Joseph E. J. King, professor of neurosurgery and attending neurosurgeon.

Dr. Edward H. Dennen, professor of obstetrics and attending obstetrician.

Mosquito Eradication.—Under a recently approved WPA schedule, \$2,540,000 will be expended for further control and eradication of mosquitoes and insect pests in the low lying sections of New York, especially Queens, it is reported. The major phase of the work will require the digging of ditches and the construction of retaining walls and dikes in swamps and ponds. According to the present plans 35 per cent of the operations will be done in the Queens sections, 20 per cent each for Brooklyn and Bronx low lying areas, 18 per cent in Staten Island and 7 per cent in Manhattan. In Queens the areas to be treated will include those surrounding the World's Fair grounds and others sections of Flushing, Howard Beach, Casino Park, South Aqueduct and south of Jamaica. In Brooklyn work will be done in the Casino and Bergen Beach sections; in the Bronx, the Pelham Bay marshy areas. In Staten Island, in Rosebank, Eltingville, Richmond Village, New Springville and Annadale.

Dr. Alger Wins Leslie Dana Medal.—Dr. Ellice M. Alger, professor of clinical ophthalmology, New York Post-Graduate Medical School and Hospital, has been awarded the Leslie Dana Gold Medal, given each year for "outstanding achievements in the prevention of blindness and the conservation of vision." Dr. Alger was selected for this honor by the Association for Research in Ophthalmology in cooperation with the St. Louis Society for the Blind, through which the medal is offered by Mr. Leslie Dana, St. Louis. Dr. Alger was one of the founders in 1915 of the National Society for the Prevention of Blindness and he has served continuously on its board of directors. The inscription on the 1938 medal refers to Dr. Alger as "A Pioneer in Sight Conservation—Wise, Understanding and Sympathetic Counsellor." Dr. Alger is 67 years of age and graduated at the University of Vermont College of Medicine, Burlington, in 1893. He formerly served as chairman of the Section on Ophthalmology of the New York Academy of Medicine.

Society News.—The New York State Society of Pathologists adopted its constitution and elected the following officers, among others, at a meeting May 10; Drs. William S. Thomas, president; Armin V. St. George, vice president, and Maxwell J. Fern, secretary treasurer. Committees were appointed to undertake to improve the economic situation of pathologists in the state. —The Bronx County Medical Society was addressed May 18 by Drs. Joseph Lawrence on "Legislation Affecting the Medical Profession"; George I. Swetlow, "Highlights in the Historical Development of Medical Jurisprudence," and Maxwell M. Booxbaum, Mount Vernon, N. Y., "The Doctor in the Witness Chair." —Dr. Harry J. Epstein, among others, addressed the Bronx Gynecological or Obstetrical Society May 23 on "Management of Delivery in Multiple Pregnancies." —At a meeting of the Medical Society of the County of New York May 23, the speakers were Drs. James Alexander Miller on "Some Unsolved Problems in Tuberculosis" and Howard W. Haggard, New Haven, Conn., "Medical Science and Medical Progress."

Joint Group Cooperates in School Health.—A committee has been established, representing the department of health and the board of education, to coordinate problems relating to the welfare of pupils, according to the *New York Times*. The new setup will prevent duplication, loss of time and frequent overlapping of effort, it was stated. The department of health has jurisdiction over the physicians and nurses, while the board of education's bureau of health education supervises the general health program. This is the first permanent committee to be set up to coordinate action on health problems by the two departments. At a meeting to be held early this month, the scope of the committee's duties will be outlined. Under existing regulations, courses in health education are given and better health habits among the pupils are developed. It will be possible now to conduct such major projects as chest x-ray examinations for tuberculosis and other health undertakings with the cooperation of the health department. The schools will continue teaching the health habits and the health department will provide medical examinations to pupils and give "advice and counsel" to school officers.

NORTH CAROLINA

Hospital News.—The Granville Hospital with a capacity of forty-five beds was opened recently at Oxford; it replaces the old Brantwood Hospital.—A medical library is being established at Grace Hospital, Banners Elk, in memory of the late Dr. Ronda H. Hardin, a member of the staff for many years.

University News.—Recent speakers at Duke University include Dr. Harold W. Brown, Chapel Hill, on hookworm and Vilhjalmur Stefansson, arctic explorer, on diet in primitive people. Dr. Hugh H. Trout, Roanoke, Va., conducted a clinic and showed a motion picture on radical mastoidectomy.

Seminar on Tuberculosis.—The second annual seminar on tuberculosis will be held at Asheville July 11-16. Special attention will be paid to early diagnosis and to both surgical and medical treatment. Registration will be limited to twenty and applications will be acted on in the order in which they are received; the fee is \$10. Dr. Karl Schaffle, Arcade Building, Asheville, is chairman of the seminar.

Members of State Medical Board.—At the annual meeting of the North Carolina State Medical Society in Pinchurst May 4, the following members of the North Carolina Board of Medical Examiners were elected: Drs. Lewis W. Elias, Asheville; William D. James, Hamlet; Karl Busbee Pace, Greenville; Frank Alexander Sharpe, Greensboro; William M. Coppridge, Durham; James S. Brewer, Roseboro, and Lester Avant Crowell Jr., Lincolnton.

OHIO

Physicians' Orchestra.—The Doctors Symphony Orchestra gave its seventy-first concert at the City Hospital of Akron May 5. Dr. Alexander S. McCormick was director and D. H. Henninger, D.D.S., concertmaster.

Society News.—Dr. Thomas E. Jones, Cleveland, addressed the Clark County Medical Society, Springfield, recently on "Diagnosis and Treatment of the Commoner Diseases of the Colon and Rectum."—Dr. Clifford G. Foor, Hillsboro, addressed the Clinton County Medical Society recently on "Diseases of the Thyroid Gland and Their Treatment."—Dr. John E. Hoberg, Columbus, addressed the Hempstead Academy of Medicine, Portsmouth, recently on "Pyelitis in Children and in Pregnancy."—Dr. Harry L. Rockwood, superintendent of Mount Sinai Hospital, Cleveland, was elected president of the Ohio Hospital Association at its annual meeting in Columbus recently. Dr. Fred G. Carter, superintendent of Christ Hospital, Cincinnati, was installed as president.

History of Medicine in Ohio.—The Ohio Committee on Medical History and Archives of the Ohio State Archaeological and Historical Society held its first meeting at the Neil House, Columbus, May 12. The committee was organized to compile a medical history of the state. Books, reprints, transactions, instruments, prescriptions, account books, saddle bags, instrument cases, diplomas, letters, diaries, genealogies and photographs and anything pertaining to the early practice of medicine in Ohio from 1788 to 1890 are especially desired. The Ohio State Archaeological and Historical Museum will become the custodians of all the material acquired. The project is the outgrowth of a suggestion to Dr. Jonathan Forman, Columbus, editor of the state medical journal, by Robert G. Paterson, Ph.D., executive secretary of the Ohio Public Health Association, proposing the establishment of a committee on medical history. Provision was made for extension of the committee and invitations were sent to interested persons throughout the state.

OKLAHOMA

Memorial to Dr. Garabedian.—The library of the late Dr. Garabed A. Z. Garabedian was recently presented to the Tulsa County Medical Society by Mrs. Garabedian. The collection on pediatrics will serve as a memorial to Dr. Garabedian.

Society News.—The Kay County Medical Society was addressed at Blackwell recently by Drs. Arthur E. Bence and Howard C. Clark, Wichita, on "Fractures of the Spine" and "Endometriosis" respectively.—Dr. Fred E. Angle, Kansas City, Kan., discussed undulant fever before the Garfield County Medical Society in Enid May 26.

University News.—A new building for biological sciences was recently dedicated at the University of Oklahoma. The unit was financed by a PWA grant of \$204,000 while \$47,000 was given by the state legislature for equipment. Lorande Loss Woodruff, Ph.D., protozoologist, Yale University, was

the guest speaker; his subjects were "Paramecium, Past and Present" and "Philosophers in Little Things." The dedicatory address was given by President William Bennett Bizzell, LL.D., who spoke on "The University, Biology and the State."

PENNSYLVANIA

Society News.—The Cambria County Medical Society was addressed in Johnstown June 9, among others, by Dr. William J. Mallory, Washington, D. C., on "Diagnosis and Management of the Common Diseases and Disturbances of the Digestive Tract."—Dr. George R. Harris, Pittsburgh, addressed the Armstrong County Medical Society in Kittanning June 8 on "Our Responsibilities as Molders of Public Opinion."—At a meeting of the Washington County Medical Society in Washington May 11, Drs. Guy M. Nelson and Adolph A. Walking, Philadelphia, discussed management of gallbladder disease.

Philadelphia

Dr. Mohler Named Dean of Jefferson.—Dr. Henry K. Mohler, medical director of the Jefferson Medical College Hospital, Philadelphia, has been appointed dean of Jefferson Medical School, succeeding the late Dr. Ross V. Patterson, effective August 1. Dr. Mohler graduated at the Philadelphia College of Pharmacy. He received his degree in medicine at Jefferson in 1912, becoming medical director of the hospital in 1914. During 1913-1914 he was in charge of the laboratory of clinical medicine at the college, serving as instructor in medicine from 1913 to 1922, when he became demonstrator. He was associate in medicine from 1925 to 1929. Subsequently he served as assistant professor in medicine, associate professor in medicine and clinical professor of therapeutics.

Society News.—Among others, Drs. Maurice Muschat addressed the Philadelphia Urological Society May 23 on "Hormonal Activity in Prostatic Hypertrophy" and James F. McCahey, "The Embryological and Histological Basis for Virilism and Hermaphroditism."—The speakers before the Philadelphia Neurological Society May 27 included Dr. Gabriel A. Schwarz on "Compression of the Spinal Cord in Osteitis Deformans of the Vertebrae."—A symposium on syphilis was presented at a meeting of the Philadelphia County Medical Society May 11 with Surg. Gen. Thomas Parran of the U. S. Public Health Service as the guest speaker. Philadelphia speakers were Drs. Frederick S. Baldi, Philip Q. Roche, Baldwin L. Keyes and Daniel J. McCarthy.—Dr. Lester W. Sontag, Yellow Springs, Ohio, addressed the Philadelphia Roentgen Ray Society May 5 on "Evidences of Disturbed Prenatal and Neonatal Growth in Bones of Infants at One Month"; Drs. Jeremiah Fletcher Lutz and Lewis C. Pusch, York, Pa., spoke on "Angio-Endothelioma of Bone."—Dr. Henry P. Brown Jr. delivered the annual oration of the Philadelphia Academy of Surgery May 16 on "Acute Osteomyelitis."

Pittsburgh

Pitt Medical Alumni Homecoming.—Alumni of the University of Pittsburgh School of Medicine held its annual homecoming June 2. The program included a symposium on recent developments in therapeutics with Drs. Murray B. Ferderber, John V. Shirer, William W. G. MacLachlan and Samuel R. Haythorn and Donald A. Wilson, Ph.D., as the speakers. A smoker was also given.

The Smoke Nuisance.—A study of the smoke problem in Pittsburgh was begun early in May under the auspices of the WPA and medical and scientific societies. The program includes the measurement of smoke coming from the chimneys and smokestacks and the tabulation of information given in questionnaires. Employers and employees in the milk business have joined to effect the delivery of the health questionnaires and the newspapers and health authorities cooperated in appealing to heads of households to answer the blanks, leaving them in their empty milk bottles to be picked up by the milk drivers. In ascertaining the number of colds, sore throats and other disorders of the nose, throat and lungs reported by families, it is hoped to determine whether, in a measure, these ailments might be caused by breathing smoke into the lungs. Agencies cooperating in the study include the Allegheny County Medical Society, General Health Council, the Air Hygiene Foundation of the Mellon Institute, department of industrial hygiene, University of Pittsburgh, Singer Memorial Research Laboratory and the U. S. Bureau of Mines. Similar surveys have been conducted in St. Louis, Indianapolis and New York; it is reported.

SOUTH CAROLINA

Superintendent of Training School Honored.—A portrait of Dr. Benjamin O. Whitten, superintendent, state training school at Clinton, was unveiled April 25. The portrait is the gift of more than 100 employees at the institution. Dr. Whitten has been superintendent since the school was opened in 1920. Dr. Frederick L. Webb, medical director, presided, and F. D. Jones, D.D., director of religious activities at the school, spoke in behalf of the employees. Dr. Whitten is 51 years of age and a graduate of Atlanta College of Physicians and Surgeons, class of 1913.

District Meetings.—At a meeting of the First District Medical Society in Walterboro recently the speakers included Drs. Robert B. Taft, Charleston, "Purpura Haemorrhagica with Reference to Radium Treatment"; John W. Regan, "Use of Sulfanilamide"; Robert Wilson Jr., "Protamine Insulin"; George R. Dawson, "Blood Transfusion Technic (Review of 1,000 Cases)," and John M. van de Erve, "Color Photography for Medical and Surgical Case Records"; all are of Charleston. —The Fifth District Medical Society was addressed in Lancaster, among others, May 11, by Drs. Carl A. West, Camden, on appendicitis; John M. Settle, Great Falls, tularemia; William B. Ward, Rock Hill, cyclopropane.

VIRGINIA

Health Department Activities.—A new full time health department will begin functioning in Buchanan County July 1. Since April 1, 1936, the county's health activities were conducted as a part of a district composed of Tazewell, Russell and Buchanan counties. Headquarters for the new unit will be in Grundy.

Personal.—Dr. William Y. Garrett, Raven, has been appointed health officer of Prince William County.—Dr. Ralph G. Beachley, deputy director of rural health in the state department of health, has been appointed health officer of Arlington County, to succeed Dr. Earle G. Brown, who recently became health officer of Nassau County, New York.

Portrait of Dr. J. S. D. Cullen.—A portrait of the late Dr. J. S. Dorsey Cullen, formerly member of the Medical College of Virginia and dean from 1886 to 1898, has been presented to the school by his grandson, Lieut. Dorsey H. Cullen of the U. S. Army. The work of Gaetan de Navailles, Paris, the portrait shows Dr. Cullen as a medical officer of the Confederate Army and will be placed on the walls of the library. Dr. Cullen was the son of Dr. John Cullen, one of the founders of the medical college. He was the first professor of diseases of women and children at the school, serving in this position from 1868 to 1881, when he succeeded Dr. Hunter McGuire as professor of surgery. He was a charter member of the Medical Society of Virginia and was at one time president of the Richmond Academy of Medicine.

WASHINGTON

Society News.—The King County Medical Society was addressed June 6 by Drs. James M. Bowers and Samuel T. Mercer on "Gout" and "Cutaneous Manifestations in the Leukemias" respectively. Dr. William Dressler, Vienna, discussed "Errors in the Diagnosis and Treatment of Heart Disease" at a meeting May 31. The society and its woman's auxiliary cooperated in conducting a hobby show May 23; a showing for the public was held May 24.

WISCONSIN

County Societies Sponsor Orthopedic Clinics.—Various county medical societies in the state have cooperated with the crippled children's division of the state department of public instruction in holding orthopedic clinics. Included among them are:

Outagamie County Medical Society in Appleton April 2.
Kenosha County Medical Society in Kenosha April 27.
Douglas County Medical Society in Superior May 14.
Portage County Medical Society in Stevens Point May 21.

District Meetings.—The Sixth Councilor District Medical Society was addressed at its annual meeting in Green Bay May 24 among others by Drs. Donne F. Gosin on "Segmental Enteritis"; William E. Grove, Milwaukee, "Deep Infections of the Neck" and Robert L. Cowles, "Congenital Pyloric Stenosis."—At the ninth annual meeting of the Ninth Councilor District Medical Society in Stevens Point May 5, Dr. M. Herbert Barker, Chicago, conducted a clinic on cardiovascular diseases and hypertension; he also presented a review of recent methods in the treatment of hypertension at the

dinner in the evening; Dr. James M. Hayes, Minneapolis, discussed "Acute Surgical Conditions of the Abdomen" and Dr. Albert E. Rector, Appleton, president elect, state medical society, spoke.

GENERAL

Medical Journals Merge.—The *Review of Tumor Therapy* and the *Southern Surgeon* have been merged. In announcing this, THE JOURNAL, June 4, reported that financial difficulties were responsible for the change. The editors of the *Southern Surgeon* wish to correct any misapprehension concerning this journal's financial status, stating that it has "always been in the black and was never more securely so than at this time." The *Review of Tumor Therapy* was taken over by the *Southern Surgeon* and is now run as a section in the latter publication under the title of Review of Neoplasms.

Medical Section of Association for Advancement of Science.—The one hundred and second annual meeting of the American Association for the Advancement of Science will be held at Ottawa June 27-July 2. The section on medical sciences (N) will meet Tuesday and Wednesday. There will be a symposium on "Bacillus Calmette-Guérin." Wednesday the session will be a joint symposium with the Section on Chemistry (C). The subjects will include: Hormones and Immunity; Bioelectric and Other Physiological Responses of Insulin and Nutrazol; The Prolongation of the Action of Insulin; The Purification of Heparin; The Ketogenic and Anti-Insulin Properties of Anterior Lobe Extracts, and Studies on the Specific Metabolic Stimulant of Pituitary Extracts.

Winners in Syphilis and Tuberculosis Control Contest.—Tacoma, Wash., won the first award in the initial syphilis control contest sponsored this year as a part of the city health conservation contest by the United States Chamber of Commerce and the American Public Health Association. Awards of merit went to Hartford, Conn., Newark, N. J., Louisville, Ky., and New Haven, Conn. In the tuberculosis control contest, the winner is Detroit, with awards of merit going to Newton, Mass., Hartford and New Haven, Conn. Points considered by the committee were the comprehensiveness of case finding and follow-up services in connection with tuberculosis and syphilis, the facilities provided for diagnostic and treatment purposes, and the extent of group participation in programs of education and control.

Bequests and Donations.—The following bequests and donations of medical interest have recently been announced:

New York Society for the Ruptured and Crippled, \$50,000; New York Medical College and Flower Hospital, \$25,000; New York Foundling and Babies hospitals, \$10,000 each, by the will of Mrs. Sophie March Gondran. All are in New York.

Fifth Avenue Hospital, New York, \$100,000 by the will of the late Adolph L. Gondran.

Mount Sinai Hospital, New York, \$35,000 by the will of William Cohen, supreme court justice.

Misericordia Hospital, New York, \$25,000, and St. Vincent's Hospital, \$5,000 by the will of Mrs. Harriet Brady Mathieu.

Montefiore Hospital, New York, \$10,000 by the will of the late Herman Lissner.

New York Ophthalmic Hospital, New York, \$2,000 by the will of the late Eliza Shardlow.

Toledo Hospital, Toledo, Ohio, will receive the bulk of an estate estimated at \$2,000,000 by the will of Frank Collins.

Presbyterian, St. Luke's, Mount Sinai and Post-Graduate hospitals, New York, \$50,000 each, and New York Skin and Cancer Hospital \$25,000 by the will of the late Henry Ware Putnam.

Jewish and Lankenau hospitals, Philadelphia, \$7,000 each by the will of the late Dr. Ellwood R. Kirby.

Methodist Episcopal Hospital, Philadelphia, \$5,000 to establish the William S. Vare endowment, and \$5,000 to the Hospital of the Protestant Episcopal Church for an endowment in memory of her daughter, Ida May Vare, under the will of the late Mrs. Ida Vare, Philadelphia.

Fiftieth Anniversary of Physiological Society.—The American Physiological Society observed its fiftieth anniversary at a banquet at the Lord Baltimore Hotel, Baltimore, April 1. The celebration took the form of a special program during the annual session of the Federation of American Societies for Experimental Biology and the preparation of a history of the society, the first twenty-five years being prepared by Dr. William H. Howell, director emeritus and emeritus professor of physiology, Johns Hopkins University School of Hygiene and Public Health, Baltimore, and the second by Charles W. Greene, Ph.D., Columbia, Mo., for many years secretary and more recently president of the society. Guests of honor at the banquet included four of the five living original members: Dr. Howell, Russell H. Chittenden, Sc.D., emeritus professor of biologic chemistry, Yale University School of Medicine, New Haven; Joseph Jastrow, LL.D., formerly professor of psychology, University of Wisconsin, and Dr. Warren P. Lombard, emeritus professor of physiology, University of Michigan Medical School, Ann Arbor. Dr. Frederick W. Ellis, Newton, Mass., the fifth surviving original member, could not attend. Dr. William T. Porter, Dover, Mass., was made honorary

president for the occasion and presided as toastmaster. The late Dr. John J. Abel, emeritus professor of pharmacology, Johns Hopkins University School of Medicine, was a guest and the British and Canadian physiologic societies were represented by Drs. William H. Newton, of Bucks, England, and Charles H. Best, Toronto.

FOREIGN

Croonian Lectures.—Dr. Francis R. Fraser, professor of medicine, University of London, and director, department of medicine, British Post Graduate Medical School, delivered the Croonian Lectures of the Royal College of Physicians of London May 24, 26 and 31. His subject was "Clinical Aspects of the Transmission of the Effects of Nervous Impulses by Acetylcholine."

Prize for Work on X-Rays.—A David Anderson-Berry Gold Medal and a sum of about £100 will be awarded in July by the Royal Society of Edinburgh to the person who in the opinion of the council has recently produced the best work on the nature of x-rays in their therapeutic effect on human diseases. Applications for the award are invited; they may be based on both published and unpublished work and should be accompanied by copies of the relevant papers. Additional information may be obtained from the General Secretary, Royal Society of Edinburgh, 22 George Street, Edinburgh 2, by June 1.

Society News.—The eighth session of conferences of the International Committee on Military Medicine will be held in Luxembourg July 1-4. Colonel Voncken, Office International de Documentation de Medecine Militaire, Liège, Belgium, is in charge of arrangements.—The second congress on renal insufficiency will be held at Evian, France, September 21-24. Information may be obtained from the secretariat, 138 Avenue des Champs-Élysées, Paris 8.—The tenth International Medical Congress for Psychotherapy will be held at Balliol College, Oxford, July 29-August 2. Additional information may be obtained from the honorary secretary, Dr. Eric B. Strauss, 81 Harley Street, London, W. 1.

Government Services

Cancer Center at Baltimore Marine Hospital

A new 100 bed center for the treatment of cancer patients will begin functioning in September at the U. S. Marine Hospital, Baltimore, under the auspices of the National Cancer Institute. Cancer patients of the twenty-two marine hospitals throughout the country will be eligible for the service, which will be financed by the cancer institute as one of its regular authorized activities. The new model center will give the U. S. Public Health Service facilities for cancer therapy which are too costly to maintain in individual hospitals for the relatively few cancer patients reporting to a single institution for hospitalization, and it will enable the National Cancer Institute to carry out one of the primary functions outlined in the National Cancer Act of 1937—study leading to improvement in the diagnosis and treatment of cancer. The Baltimore hospital has a capacity of 450 beds with adjacent quarters for officers and nurses, a research laboratory in addition to the laboratory for routine clinical examinations, facilities for x-ray diagnosis, physical therapy, dental and eye, ear, nose and throat clinics. Proximity to the future home of the National Cancer Institute in Bethesda, Md., was another factor in the selection of the Baltimore hospital. It is about 30 miles from the Bethesda site, where buildings of the National Institute of Health are already under construction. About 100 bed patients will be accepted at the clinic. The second floor of the hospital will be devoted to the care of bedpatients and to the admission of outpatients. Rooms in the basement will be equipped for x-ray and radium therapy and the pathologic work will be done in the research laboratory. Marine hospital patients amenable to ambulatory treatment may also be sent to Baltimore, but they will have to reside in the city at their own expense.

The cancer treatment center will be furnished with 500 milligrams of radium element and a 200 kilowatt x-ray machine, later to be supplemented with a 1,000,000 or more high voltage machine. The rooms of the hospital which will be assigned for the handling of x-rays and radium will be altered and equipped for adequate protection by the use of lead-impregnated walls and glass. It is estimated that the purchase of the radium and x-ray equipment, together with the necessary structural alterations, will cost approximately \$30,000.

Foreign Letters

LONDON

(From Our Regular Correspondent)

May 28, 1938.

Nonmalignant Stenosis of the Esophagus

In his presidential address to the Section of Surgery of the Royal Society of Medicine, Prof. Grey Turner said that he had been taught that cancer of the esophagus was almost the only cause of obstruction, but he remembered a casual remark made by W. J. Mayo in 1906 that it was always worth doing a gastrostomy because the diagnosis might be wrong. During the last few years Turner had seen many examples of simple stenosis.

CAUSATION

The causation of fibrous stricture was usually obvious, generally the swallowing of corrosive fluid, but there were other causes, such as local or general infections. Milder destructive changes in the esophagus might be induced by regurgitation of very acid or toxic gastric contents and might occasionally lead to stenosis. Brown Kelly, of Glasgow, had shown that a secondary fibrosing condition might begin in association with some congenital defect.

PREVENTION

In the presence of conditions which invariably led to stenosis prevention was important. Salzer advised the passage of instruments in the early days, but this was dangerous; it was better to defer this treatment until four or six weeks after the accident. Turner had seen perforation of the esophagus by a bougie on the twenty-sixth day after the carbolic acid was swallowed. As to the ultimate condition, many patients could be permanently cured by persistent dilation, but in a few the tendency to recur persisted for many years and perhaps throughout life. Other methods were available. The swallowed string, usually associated with the name of Plummer, had a great field of usefulness. Turner had no success with the retrograde passage of a bougie through an artificial gastric fistula, but others had. He condemned attempts at excision of a simple stricture with end to end anastomosis. In cases which defeated the various methods mentioned there was always the possibility of making a new esophagus, but every attempt should be made to restore nature's path before trying to replace it by a surgical exploit.

Osteopath to Be Tried for Manslaughter

Though not recognized by the state, osteopathy is not only tolerated in this country but, like other forms of irregular practice, is patronized by persons of high social position and is often a lucrative business. However, meddling with a dangerous disease may prove serious, as the following case shows. A young school teacher had been under medical treatment for diabetes for some years. According to her physician her condition was satisfactory and likely to remain so provided she followed the dietetic instructions and continued with injections of insulin. She met an osteopath who told her that she had not diabetes and was suffering from anemia. His examination merely consisted of looking at her eyes and feeling her pulse. He told her to fast for four days and take orange juice every two hours. She did so and discontinued her injections of insulin. She became ill, and then the osteopath advised that she be given a little insulin in milk, but she lapsed into coma and died. The osteopath was committed for trial on the charge of manslaughter.

A Standard for Prematurity

In the compilation of the report of Queen Charlotte's Maternity Hospital, the definition of prematurity came in question. It was decided to refer it to the British Paediatric Association and the Section of Diseases of Childhood of the Royal Society of Medicine. These bodies in turn referred it to a committee

of pediatricians, who suggested a standard of 5½ pounds (2,500 Gm.) weight or under. This was circulated to various bodies, including the Royal College of Physicians and the British College of Obstetricians and Gynecologists. Neither of these was satisfied, and a further committee was set up, which included the president of the latter college, Sir Ewen Maclean, and other authorities. This committee came to the conclusion that it was impossible to define prematurity satisfactorily but that some standard was desirable for the purposes for which the proposed definition was intended. They adopted the following resolution: "That in conformity with the standard in international use an infant whose birth weight is 5½ pounds (2,500 Gm.) or less shall be considered, for the purpose of comparison of records, as either immature or prematurely born, according as the estimated period of gestation is full time or less."

Professor Boycott Is Dead

Prof. A. E. Boycott, who was a well known pathologist, has died in his sixty-second year. He was editor of the *Journal of Pathology and Bacteriology*. He became lecturer on pathology at Guy's Hospital in 1907; he was transferred to the chair of pathology at Manchester in 1912 and to that of University College, London, in 1915. At a comparatively early age he established a reputation for his studies in experimental pathology in collaboration with the late Prof. J. S. Haldane. They investigated the anemia of Cornish miners, which was supposed to be due to defective ventilation but was proved by them to be due to ankylostomiasis. Boycott's work on the blood changes in that disease and the problems connected with the passage of the larvae through the intact skin was of the first importance. In collaboration with Haldane he investigated compressed air illness (caisson disease) and showed how divers could safely be decompressed. His early work on the blood changes in ankylostomiasis led to an interest in experimental anemia and blood regeneration, on which he became a leading authority. He also was a naturalist, and snails, which he bred, were a special hobby.

PARIS

(From Our Regular Correspondent)

May 21, 1938.

Surplus of the Social Insurance Funds

An editorial in the May 14 issue of the *Journal des Practiciens* on the fate of the surplus funds collected by the social insurance authorities is of interest. The receipts from joint payments by the insured and the employers since 1930, when the law was instituted, to the end of 1936 have been about twenty-one billion francs (nearly \$600,000,000). The disbursements in the form of sickness, maternity and death claims have been only about seven billion francs. All the insurance premiums paid by workers and employers do not remain in the funds of the caisses or bureaus of the social insurance organization. A certain proportion are set aside as a reserve fund; hence the caisses have received only a little over ten billion francs, so that the surplus above payment of claims amounts to three and a half billion francs up to the end of 1936. The question arises, what has become of this surplus? Large sums have been lost, according to the editorial, in lending money to politicians to be used in erection of low-priced dwellings. There has been such a lack of judgment on the part of the social insurance authorities in their investments in the form of buildings, etc., that the French treasury heads have been obliged to intervene.

Pneumococcic Encephalitis

At the May 3 meeting of the Académie de Médecine of Paris, three cases of encephalitis due to the pneumococcus were reported by Professor Marinesco and his co-workers. Three cases of pneumonia complicated by cerebral localization of the pneumococcus were observed clinically, and the condition was

confirmed by studies of the brain tissue obtained at necropsy. Pneumococcic encephalitis differs from other forms of this disease. The lesions involve chiefly the white substance of the cerebrum, giving rise to areas of demyelination with characteristics peculiar to this type of infection. In addition to the myelin tissue, the neuroglia shows evidence of intense changes of toxic origin, reacting by marked mitoses. Perivascular round celled infiltration is a third typical observation, accompanied by punctate hemorrhages in the adjacent brain tissue and blood vessels filled with fibrin. The presence of the pneumococcus in the cerebral tissue was confirmed by staining and culture.

Excessive Speed the Primary Cause of Automobile Accidents

An international bureau in Geneva forming a part of the League of Nations is analyzing statistics on the causes of automobile accidents. The first series of French statistics has recently been published by the Minister of Public Works and includes accidents throughout France during January of the present year. Although January is not a holiday month, with a large number of private automobiles on the road, there were 319 deaths and 4,164 injured in 3,471 accidents. Of these accidents, 1,371, or nearly 40 per cent, took place in Paris or its suburbs. The largest number occurred during the week end. There were 665 accidents, with fifty-one deaths, on the five Sundays and 586, with sixty-two deaths, on the Mondays; Monday is now a holiday for many people here, as a result of the forty hour a week law. The hurry of automobilists to reach their destination and to return before Tuesday, as well as the lack of knowledge of the roads by some motorists, explains the frequency of these week end accidents. The majority of accidents occurred between 4 and 8 o'clock in the afternoon, the smallest number between 3 and 4 o'clock in the morning. Collisions between motor vehicles and cyclists provide the largest number of fatal accidents. Of 2,275 collisions between motor vehicles of all types and cyclists, 516, with thirty-six deaths, were between passenger automobiles and cyclists and 142, with twenty-deaths, between trucks and cycles. Pedestrians head the list of victims of automobile accidents, with 1,367 injured and 126 killed. The occupants of automobiles, excepting drivers, come next, with 1,055 injured and fifty-two killed. The better the visibility and the better the roads, the greater is the number of accidents, indicating that speeding is responsible. Of the total of 3,471 accidents, 2,246 occurred on straight roads, resulting in 200 deaths. There were 379 accidents, with forty-five deaths, at curves and 585, with twenty-two deaths, where roads crossed.

The Incubation Period of Mumps

Drs. de Lavergne, Kissel and Accoyer, in a paper read at the May 17 meeting of the Académie de Médecine of Paris, reported having found the cerebrospinal fluid of patients in the incubation period of mumps virulent for rabbits. The fluid obtained by lumbar puncture from human beings shows a slight but distinct hypercytosis, from 3.5 to 12 lymphocytes per cubic millimeter. This meningeal reaction could only be found fifteen days after exposure to infection, thus appearing before the onset of the parotitis. The meningeal reaction remains unchanged during the period in which there are already clinical evidences of the infection. In some cases the meningeal reaction remains latent, while in others it gives rise to meningitis either before or after the appearance of the parotitis. The virulence of the cerebrospinal fluid toward rabbits and the hypercytosis of the spinal fluid have almost always been found in human beings exposed to infection who did not present signs of parotitis. This means that these persons exhibit only a meningeal localization and not a parotid one. This explains why, clinically, cases have been observed in which the infection appears only a primary meningitis. In rabbits which have been given injections of the virus into the spinal canal, meningo-

encephalitis not followed by parotitis is always observed. The conclusion reached by the authors is that the occurrence of parotitis is the most typical clinical evidence of an infection by the virus of mumps but not the most reliable or constant sign of such an infection.

Course in Bronchoesophagoscopy by Dr. Chevalier Jackson

Dr. Jean M. Le Mée, in charge of the Otolaryngological Service of the Children's Hospital of Paris, has arranged a course in bronchoesophagoscopy to be given by Dr. Chevalier Jackson, of Philadelphia, and some of his former American and European assistants. The course will begin August 23 and continue until September 1. Lectures and clinical demonstrations will be given in the Blumenthal pavilion of the Children's Hospital and operations on the cadaver at the medical school. Information in regard to the course can be obtained by writing to Dr. Jean Zhâ, assistant in otorhinolaryngology, Hôpital Necker et Enfants-Malades, 149 rue de Sèvres, Paris 15c.

BERLIN

(From Our Regular Correspondent)

May 3, 1938.

Increased Incidence of Rickets

In view of the progress made in recent years in research on vitamin D, it is surprising that an increased incidence of rickets has been reported in Germany and in other countries. This was recently pointed out by the *ordinarius* for pediatrics in Kiel, Prof. E. Rominger. According to several reports, the incidence of rickets among the nurslings of the Westphalian industrial region is between 37 and 46 per cent, and in the city of Dortmund it reaches 55 per cent. From Vienna an incidence of 40 per cent is reported. In the maternal consultation centers in Paris, 40 per cent of nurslings were rachitic. In Basel, Switzerland, the incidence was found to be 75 per cent during the winter and 50 per cent during the summer. Rominger himself gives for Kiel, that is, for a population of Northern Germany, as a conservative estimate 60 per cent for the winter and 40 per cent for the summer; this applies to nurslings who are brought to the clinic for consultation. Of about 1,000 school children in Munich, only 3.5 per cent were found to be free from rickets. Even more surprising are the reports about the increased incidence of rickets in high mountains, in Finland (more especially in fishing districts, in which the population practically lives on fish oil), as well as in the tropics, with the longest and most intensive exposure to sunlight that is possible. Moreover, even in breast-fed nurslings, rickets has been found more frequently in recent years, in Germany occasionally and also in Yugoslavia and in Egypt. A Norwegian investigator even found a high percentage of rachitic infants among those who had nursed at the breast for eight or nine months, and observers on the west coast of Sumatra state that rickets is frequent in spite of the fact that all infants are nursed at the breast.

Rominger believes that he has found the cause for these surprising observations: In the tropics, in Sumatra, the infants are nursed at the breast for a sufficient length of time, but the diet of the mothers is entirely inadequate. To be sure, the intensive sunlight compensates for many defects if the children are really sufficiently exposed to the sun; this, however, is not always the case, because the natives live in pile dwellings, and the young nurslings often remain confined in the house for long periods. In Germany the nutrition of the mothers is generally adequate, but nursing at the breast is not continued for a sufficient length of time; moreover, sufficient natural sunlight is not everywhere available. The conclusion is drawn that every bottle-fed infant requires prophylactic treatment against rickets. The high incidence of rickets in our latitudes can be traced to the fact that the breast feeding of infants is

still not continued for a sufficient length of time and that they are fed too early with a one-sided milk-gruel diet. To be sure, it is possible that only an inadequate quantity of ultra-violet light penetrates the smoke blanket over some industrial cities. Nevertheless, rickets is almost more frequent among the children in rural regions than among the children in cities. Rominger sees the cause in the fact that instructions about this matter reach the city population more readily than the rural population.

Another cause of the frequency of rickets, which is never mentioned, Rominger sees in the inadequate doses of all anti-rachitic remedies. Irradiation with the quartz lamp should not be done now and again but should be done methodically. The doses of vitamin D that are given to bottle-fed infants are usually either too small or are given for too short a time or not regularly. Rominger thinks that there prevails an entirely unjustified fear of excessive doses. With many cod liver oil preparations which have been modified to improve the taste it is necessary to increase the doses in accordance with the lower vitamin D content. It is not enough to prescribe vitamin D or cod liver oil according to a fast rule; the dose must be determined in each individual case, and even for the same child it may have to be temporarily doubled or tripled, for instance, in the course of an infectious disease. In the inadequate and therefore dangerous doses Rominger sees one of the most important causes of the increased incidence of rickets during recent years. The correct dosage cannot be laid down in general rules, and it cannot be left to a lay person. In the prophylactic treatment, especial attention must be given to the right time to begin vitamin D medication in reference to the age, the time of birth and the season of the year; for instance, children born during late summer should receive vitamin D earlier, longer and in larger doses than children born during the winter. Premature infants should receive an especially early and generous prophylactic treatment.

Duration of Pregnancy

The computation of the time of birth heretofore was generally done by the method of Naegele, according to which the period of gestation is computed by counting 280 days from the first day of the last menstrual period. However, the results of a number of new investigations do not quite tally with this figure. For this reason, Dr. K. J. Anselmino, director of the women's clinic of the Rhine province, in Elberfeld, has investigated this problem on a large material. Only those cases were considered in which the labor pains began spontaneously, in which there was an exact record of the first day of the last menstruation and in which the fetus was at least 48 cm. long and weighed 2,800 Gm. With these points in view, 15,000 of the last 25,000 deliveries of the aforementioned clinic qualified for the investigation. It was found that the arithmetical mean of the duration of pregnancy, computed from the first day of the last menstruation, is 282.8, or about 283 days. It is the same for male and female fetuses, but in primiparas it is slightly longer than in multiparas. For this reason it is better for practical purposes to add not seven but ten days after the three months have been subtracted as usual. The term of 282.8 days is a mean value, around which there is a considerable dispersion of individual values. If five days is added to or subtracted from 282 or 283 days, only 43.9 per cent of the women had their delivery within these ten days, whereas more than 25 per cent were not even confined within twenty days, that is, \pm ten days. The determination of the true length of pregnancy, computed from the day of conception, revealed a mean value of 269 days. Since the term of conception is dependent on the length of the cycle, there are in cases of abnormally long or of abnormally short cycles apparent fluctuations in the period of gestation, which must be taken into consideration if the date of birth is computed on the basis of the last menstruation. For this reason the length of the cycle should always be considered

when the date of birth is computed. The formula "minus three months, plus ten days" corresponds to the arithmetical mean of the length of gestation in cases in which there is a twenty-eight day cycle; for the other cycles so many days have to be added to or subtracted from the computed day of delivery, as the cycle in question deviates from the twenty-eight day cycle.

Prof. Erich Hoffmann 70 Years Old

Erich Hoffmann, for many years *ordinarius* for dermatology and venereal diseases in Bonn, celebrated his seventieth birthday April 25. Originally a military physician, he rapidly advanced in a scientific career. After having worked in Berlin and Halle, he became in 1910 director of the dermatologic clinic of the university of Bonn, and as such he held the chair for this specialty. He first became prominent when in 1905 he, together with Schaudinn, demonstrated *Spirochaeta pallida* as the cause of syphilis. He determined the presence of spirochetes in the lymph nodes of patients with acquired as well as with congenital syphilis and described a method of glandular puncture for this purpose. He demonstrated that syphilis can be transmitted by vaccination with syphilitic blood or cerebrospinal fluid. He also made contributions to the development of the therapy of syphilis. Hoffmann published a large number of papers of high merit. When, five years ago, he resigned from his professorship, the activities of this unusually energetic man did not terminate. He continued his research work in the laboratory and made lecture tours; in 1937 he made a trip of several months' duration in response to an invitation from American physicians.

CAPE TOWN

(From Our Regular Correspondent)

May 5, 1938.

The Annual Medical Congress

The annual medical congress will take place this year in September, by invitation of the Portuguese government, at Lourenço Marques. The congress is held under the auspices of the Medical Association of South Africa and the association is limited to the Union of South Africa. Negotiations between the Portuguese physicians at Lourenço Marques and the association's office at Cape Town easily overcame all organizational difficulties. For purposes of the congress the Lourenço Marques practitioners were all made honorary members of the Association, and the local organizing committee, or rather its honorary secretary and honorary treasurer, Dr. Bostock and Dr. de Carvalho, arranged an interesting program. The president of the congress is Dr. Vasco Palmeirim, senior medical officer of Lourenço Marques, while the patrons are the Portuguese ministers of education and colonies and the governor of the province of Moçambique. The Portuguese government had granted a subsidy to provide for the visit to the congress of professors of the faculties of medicine in Portugal. One problem has been that of providing accommodation for visiting members. Delagoa Bay has limited hotel accommodations and at that time of year it is one of the most popular seaside resorts in South Africa. However, the Italian Steamship Line has agreed to send the luxurious *Duilio*, now running between Cape Town and Genoa, on an excursion cruise to Delagoa Bay to provide not only transportation but accommodation for intending participants in the congress. It is anticipated that the meeting will be one of the most popular that we have had. In 1941 the association will hold a joint congress with the British Medical Association, but arrangements for that meeting have not yet been made.

Dagga Smoking

The use of Indian hemp (*Cannabis sativa*) for narcotic purposes is widespread in South Africa, where it has been prevalent since the days when the plant was introduced from Java at the time of van Riebeeck. Even then, however, it was found that the aborigines smoked a local plant, which they called "dagga." This plant is known botanically as *Leonotis leonurus*,

and it is popular in gardens as an ornamental shrub. Dagga smoking has gradually been replaced by hemp smoking, but the name "dagga" has been used by the police and the public for cannabis. In consequence, confusion has arisen about the effects of real dagga smoking. A report by experts from the mental hospitals has been published in which the effects of hemp smoking are considered, but nothing is said about *leonotis* smoking. The effects of Indian hemp are well known and there is no difference of opinion about their cumulative toxicity, but there is a difference of opinion about the toxic effects of *leonotis*. It is regrettable that the name "dagga," which is historically and botanically applicable to *leonotis* alone, should still be attached to Indian hemp. Dagga smoking is mildly sedative and probably not more harmful to the system than moderate tobacco smoking; cannabis, on the other hand, is definitely a narcotic the use of which should at all events be regulated.

New Hospital on Cecil Rhodes Estate

The new hospital erected on the Cecil Rhodes estate and known as the Groot Skuur Hospital was recently opened and, despite the difficulties of staffing it is already working satisfactorily. So far as planning and construction are concerned, it is most interesting. The architect had to cope with several serious difficulties, among these being the problem of lighting the interior of the hospital buildings and the equally difficult problem of overcoming the effects of windage while providing adequate ventilation. Where the building stands, the southeasterly wind sometimes sweeps down the mountain slopes with a terrific velocity, creating eddies that violently disturb everything with which it comes into contact. The building was originally planned on the pavilion system, which made possible a ready solution of some of these structural difficulties, but the plan was changed to the block system. It is now a seven storied-basement block, providing scheduled accommodation for more than 800 beds, but more patients can be accommodated if necessary. At present some floors are not occupied, as it has been impossible to obtain an adequate nursing staff. The equipment is on the lines of the best American and Continental hospitals. The hospital has been designed as a general hospital. In the children's department, provision has been made for glass cubicles to permit patients with infectious diseases being nursed in the same ward. A paying block is being erected, but it is not clear yet what this addition is to serve. Apart from the fact that there is some doubt about the legality of providing such a paying ward—because the will of Cecil Rhodes prohibits the erection on any part of his estate of buildings designed for profit—there is some misgiving about the desirability of joining a paying ward to a closed institution such as the Groot Skuur Hospital must be, forming as it does the medical and surgical unit of the local university. The profession is perturbed about the innovation, and it is possible that there may be modifications of the present scheme.

Deaths in the Profession

The wastage from deaths in the profession has been considerable. Dr. D. H. Wessels, the foremost gynecologist and obstetrician in South Africa, died suddenly at the age of 56. Dr. A. B. Thomson, one of the pioneers of school medical inspection in the country, died in Natal after a lingering illness; he came to South Africa to organize school medical inspection work in Natal and later went into general practice. Dr. R. B. Thomson, who died in the same week, was the first professor of anatomy at the medical school attached to the University of Cape Town but forsook, for reasons of health, his academic work and retired to a village on the Orange River, where he contented himself with a small private practice. Other deaths during the past few months have been those of Drs. J. Duminy, George Hay, G. Munnik, L. McDowell, O. Heyns and H. N. Everard, all senior practitioners well known in the profession.

ITALY

(From Our Regular Correspondent)

May 15, 1938.

Treatment of Rheumatic Disorders

Treatment of rheumatic disorders was the theme of discussion at a recent meeting of the Accademia Medica di Roma over which Prof. Roberto Alessandri presided.

Professor Gosio reported the treatment of rheumatism with intravenous injections of aminopyrine. The intravenous route, he said, permits the action of even small doses of from 100 to 300 mg. He held that treatment with salicylates is still an indispensable therapeutic procedure. The administration of aminopyrine, however, represents a useful and powerful adjuvant, especially for subacute and visceral rheumatism or if the administration of antirheumatic substances by mouth cannot be readily effected. Professor Arcangeli has successfully treated acute rheumatic disorders with salicylate and achieved cure within a few (three or four) days. In addition, he claims that by use of salicylates endocarditis can be prevented, cured or at least palliated and also that pericarditis and myocarditis can be favorably influenced by the same means. To obtain such results, however, it is necessary to administer intravenously, orally or rectally daily doses as high as from 20 to 30 Gm., which may gradually be decreased. By this procedure he has been able also to combat successfully the severe hyperpyrexia that often follows rheumatism and which may be a symptom of endocarditis. Aminopyrine may be usefully employed in treating cerebral rheumatism.

Dr. Poddu observed that it might be interesting to apply the method proposed by Professor Gosio to rheumatic heart disease of the nonfebrile type. The therapeutic efficacy of the method might then be evaluated by successive determinations of the erythrocyte sedimentation rate as well as by the clinical course. According to Professor Pontano, sodium salicylate is of specific therapeutic value in treating acute articular rheumatism, although in his opinion it has no demonstrable effect on concomitant endocarditis. He does not advocate extremely high doses and prefers instead daily administration of from 6 to 8 Gm. on a regular schedule of 1 Gm. every four hours. A sound evaluation of the effect of aminopyrine should result from its experimental use in the treatment of acute forms of rheumatism in children, as the internal organs of children are particularly responsive. Professor Gosio summarized the discussion, which demonstrated, he said, the uncertainties that still surround the specific action of sodium salicylate.

Absence of Dorsal Fixation of Mesentery

Prof. Tommaso Lucherini, of Rome, has studied the absence of dorsal fixation in the differential diagnosis of painful abdominal syndromes. In a report submitted to the Società di Gastroenterologia, he described three cases of absence of fixation of the mesentery, in two of which the failure was complete. One of these cases was characterized by intermittent accessional spasms, referable to the pyloroduodenal region. The attacks tended to come on at meal time, and the symptoms resembled those of duodenal ulcer. The presence of ulcers was not demonstrated by roentgen examination, and symptomatic medical therapy was followed by a measure of success. In the second case the condition began with clinical symptoms of pain referable to the right iliac fossa, which, because of its dull, protracted afebrile development, was suggestive of chronic appendicitis. After roentgenoscopic study, however, such a diagnosis was ruled out. The third case, although the defect was only partial, represented an interesting example of malformation due, according to the author's observations, to a defective rotation of the ansa media; that is, the prearterial descending section (originating in the small intestine) did not rotate, whereas the postarterial descending section (originating in the cecocolon) rotated normally. Roentgen visualization revealed the duodenum free and the small intestine dextroverted, but no inversion of the

long intestine and no ulcerative or inflammatory processes. The patient was periodically seized with pains in the umbilical region, which became violently diffused in the two right quadrants and were often accompanied by emesis. This occurred at intervals of about two months. The attacks would last three or four days and were relieved by administration of belladonna and alkaline substances.

The author concludes that it is impossible to establish a certain clinical diagnosis of defective fixation of the mesentery, since the painful and dyspeptic gastroenteric disturbances which accompany the ectopia are common to many organic lesions of the digestive tract; e. g., ulcers, appendicitis and cholecystitis. Only roentgenoscopic examination permits the sure recognition of the anomaly and then only if every segment of the digestive tract is completely visualized through mediums administered orally and by rectum. Therapeutic approach, aside from symptomatic measures, can be only by surgical intervention. The concomitant complications of absence of fixation, in addition to the morphologic and topographic alteration which facilitates the production of other lesions, are due to the particularly mobile character of the intestinal loops. If painful dyspeptic disturbances are encountered, roentgenoscopic examination is indispensable in the differentiation of intestinal dystopias from disturbances related to nervous and tonic alterations and from organic disturbances of the abdominal viscera.

Systemic Disorders of the Reticuloendothelial System

Professor Dr. Bossa has observed a case of systemic endotheliosis in a man, aged 34, who presented the symptoms of a disorder of the lymphatic system. At necropsy a reaction of the hyperplastic type was evidenced by all the lymphoglandular apparatus and the endothelium of the various lymphatics. The latter appeared macroscopically to be completely infarcted, as if a state of diffuse lymphangitis had existed, related as much to the serous membrane as to the parenchyma. No neoplastic formations were detected in any organs. Microscopic examinations showed that only the endothelium of the lymph nodes and of the lymph sinuses were involved; the normal endothelial line was no longer recognizable, and the entire lumen was occupied by large histiocytes, which showed great polymorphism of the protoplasm and of the nuclei. In reporting the results of his studies to the Accademia della Scienze Mediche e Chirurgiche of Naples, the author discussed the origin of the cells which occupy the lumen of normal lymph vessels and which may be hyperplastic and proliferative, their progressive and regressive aspect, their tendency to form syncytial masses, their manifest phagocytic activity. The study of other cells of the reticuloendothelial system, Kupffer's cells, the perivascular histiocytes and so on, evidenced their perfect integrity; of all these cells, the cells of the serous layer proper also appeared unaltered. The sum of the histologic research data formed a picture of a singular morbid disorder of the endothelial cells of the lymph nodes and of the lymph sinuses. The author proposes that this should be considered as a special form of endotheliosis.

Marriages

JOHN MILTON BARRETT, Greenville, N. C., to Miss Florence Elizabeth Schwartz of Lancaster, Pa., in Baltimore, April 27.

WALDO MASON WATTLES, Farmville, Va., to Miss Lois Wright of Fredericksburg, in Welch, W. Va., April 30.

MAURICE M. ROSENBAUM, Shallotte, N. C., to Miss Kitty Mathias of Wilmington, May 2.

HUBERT RUSSEL HATHAWAY, Madison, Wis., to Miss Lucille Gear of Riverside, Ill., in April.

CHARLES TORBERT BEPPY, Greenville, Miss., to Miss Betty Stevens of Senatobia, April 28.

SAMUEL PARNELL DURR to Miss Dorothy Harker, both of Rock Island, Ill., April 23.

Deaths

Royal Samuel Copeland, United States Senator from New York, died, June 17, at Washington, D. C., aged 69. Senator Copeland was born in Dexter, Mich., Nov. 7, 1868. He received the medical degree from the University of Michigan Homeopathic Medical School, Ann Arbor, in 1889 and later studied abroad. For five years, from 1890 to 1895, he practiced at Bay City, Mich., after serving one year as house surgeon to the University Hospital, Ann Arbor, and as assistant to the professor of ophthalmology and otology at his alma mater from 1889 to 1890. He was professor of ophthalmology from 1895 to 1908. In the latter year he went to New York, where he became dean and professor of ophthalmology at the New York Homeopathic Medical College and Flower Hospital, serving for ten years. Senator Copeland was commissioner of health and president of the New York City board of health from 1918 to 1923. He became United States Senator in 1923, serving until 1929, and was reelected for terms 1929-1935 and 1935-1941. He was mayor of Ann Arbor, president of the board of education and from 1900 to 1908 treasurer of the National Board of Control of the Epworth League. He was a fellow of the American College of Surgeons and a past president of the American Ophthalmological and Otolological Association. Senator Copeland was co-author with A. E. Ibershoff of a textbook "Refraction," 1906, author of "The Health Book," 1924, a "Home Medical Book," 1935, and for many years of a newspaper health column. He received honorary degrees from Lawrence University, Hahnemann College, Philadelphia, Syracuse University, Oglethorpe University and Temple University.

Thomas Lathrop Stedman • New York; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1877; author of "A Practical Medical Dictionary," which has been widely used in the medical profession and of which the thirteenth edition was published in 1936; editor of the "Twentieth Century Practice of Medicine," and of the "Reference Handbook of the Medical Sciences" and of "The Nurse's Medical Lexicon"; edited other medical dictionaries and handbooks, and contributed to other medical publications; aged 84; died, May 26.

Alleyne Von Schrader • Lieut. Colonel, U. S. Army, retired, Palos Verdes Estates, Calif.; Washington University School of Medicine, St. Louis, 1909; entered the medical corps of the army in 1911; served during the World War; retired as a major in 1920 for disability in line of duty; was promoted to lieutenant colonel in 1930 under a special act; formerly on the visiting staff of the Community Hospital, Long Beach; aged 51; died, March 25.

Harry M. Miley, Chambersburg, Pa.; Medico-Chirurgical College of Philadelphia, 1893; member of the Medical Society of the State of Pennsylvania; veteran of the Spanish-American War; past president of the Medical Society of Franklin County; for many years member of the board of health and formerly health officer; formerly on the staff of the Chambersburg Hospital; aged 73; died, March 17.

Robert B. Campbell, Mount Union, Pa.; Medico-Chirurgical College of Philadelphia, 1895; member of the Medical Society of the State of Pennsylvania; past president of the Huntingdon County Medical Society; president of the school board; aged 73; died, March 17, in the Jefferson Hospital of prostatic hypertrophy and myocarditis.

Charles Ellis Bredt • Mahanoy City, Pa.; Medico-Chirurgical College of Philadelphia, 1908; formerly assistant demonstrator of anatomy at his alma mater; at one time member of the city board of health; on the staff of the Locust Mountain State Hospital, Shenandoah; aged 57; died, March 19.

A. Howard Townsend • Apollo, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1900; past president of the Armstrong County Medical Society; on the staff of the Armstrong County Hospital, Kittanning; aged 63; died, March 12, in the Western Pennsylvania Hospital, Pittsburgh.

William J. Flannery, Brooklyn; Yale University School of Medicine, New Haven, Conn., 1901; member of the Medical Society of the State of New York; formerly associate visiting surgeon to St. Mary's Hospital and St. Catherine's Hospital; aged 61; died, April 19, of carcinoma of the colon.

Edwin Stanley Cooke, Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1888; served during the World War; member of the Medical Society of the State of Pennsylvania; aged 73; died, March 2, in the United States Naval Hospital, of heart disease.

William Alexander Welch • Callao, Mo.; Washington University School of Medicine, St. Louis, 1903; past president of the Macon County Medical Society; formerly county coroner and member of the school board; aged 65; died, March 23, of an infection of the gallbladder.

Frank Foster Sumney, Dravosburg, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1891; member of the Medical Society of the State of Pennsylvania; formerly member of the state legislature; past president of the school board; aged 71; died, March 20.

David Barnes Cooley, Pottstown, Pa.; New York Homeopathic Medical College and Hospital, 1913; member of the Medical Society of the State of Pennsylvania; served during the World War; on the staff of the Homeopathic Hospital; aged 54; died, March 22.

Milton Tighlman McCarty, Frankfort, Ind.; Central College of Physicians and Surgeons, Indianapolis, 1902; city health officer; formerly member of the state legislature; aged 64; died, April 1, of bronchopneumonia, pulmonary fibrosis and esophageal diverticulum.

Samuel Warren Miller, Hamburg, Pa.; University of Colorado School of Medicine, Denver, 1912; member of the Medical Society of the State of Pennsylvania; aged 49; served during the World War; was found dead in March of carbon monoxide poisoning.

Abraham Royden Gregory • Jacksonville, Ill.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1907; at one time assistant in ophthalmology at his alma mater; aged 59; died, April 8, of cerebral hemorrhage and hypertension.

J. Harry Pickle, Millersville, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1891; member of the Medical Society of the State of Pennsylvania; aged 75; died, March 2, of cerebral hemorrhage.

Joseph Richardson Parke, Philadelphia; College of Physicians and Surgeons, Baltimore, 1889; veteran of the Spanish-American War; aged 84; died, March 8, in the Pennsylvania Hospital of injuries received in a fall.

Glendon Franklin Sheppard • Philadelphia; Temple University School of Medicine, Philadelphia, 1923; aged 40; on the staff of the Temple University Hospital, where he died, March 6, of heart disease.

Charles Edmund Ward, Little River, Kan. (licensed in Kansas in 1934); member of the Kansas Medical Society; past president of the Rice County Medical Society; aged 72; died, March 30, of pneumonia.

John Harold Fears • South Bend, Ind.; Ohio Medical University, Columbus, 1903; aged 61; on the staff of the Epworth Hospital, where he died, April 9, of arteriosclerosis, uremia and hypertension.

William Johnson George, Johnstown, Pa.; University of Wooster Medical Department, Cleveland, 1881; member of the Medical Society of the State of Pennsylvania; aged 81; died, March 6, of asthma.

Cooley Baldwin Van Meter • Cincinnati; Miami Medical College, Cincinnati, 1887; for many years examining alienist for the county probate court; aged 76; died, March 17, of arteriosclerosis.

Daniel Frank Gray • Providence, R. I.; Bellevue Hospital Medical College, New York, 1892; on the staff of St. Joseph's Hospital; aged 74; died, April 21, of coronary sclerosis and myocarditis.

Archie Wallace Leech • Beaverdale, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1911; for many years postmaster; aged 59; died, March 24, of coronary thrombosis.

Franklin Pierce Herr, Ridgely, Md.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1878; aged 86; died, March 18, of chronic interstitial nephritis.

Thomas Taylor Kirk • Pittsburgh; Long Island College Hospital, Brooklyn, 1886; aged 77; died, March 16, in the Western Pennsylvania Hospital, of pneumonia.

Stephen Walter Gryczka, Reading, Pa.; Jefferson Medical College of Philadelphia, 1919; aged 49; died, March 6, in St. Joseph's Hospital, of cerebral hemorrhage.

Edward Was, Oostburg, Wis.; Rush Medical College, Chicago, 1884; aged 79; died, March 3, of hypertension and coronary thrombosis.

Henry Surville Holloman, Olla, La.; Memphis (Tenn.) Hospital Medical College, 1900; aged 59; died, April 12, of cerebral thrombosis.

Bureau of Investigation

POW-O-LIN

Another Laxative with a "Kick"

Any one at all familiar with the "patent medicine" industry knows that one of the simplest nostrums to float successfully is a laxative containing enough alcohol to impress its physiologic action on the patient. "Pep 'em up and clean 'em out!" An advertising appropriation is, of course, essential, because the business is highly competitive. But with those requirements met, business can almost be assured.

"Pow-o-lin," or, to give it its full name, "Hamlin's Pow-o-lin," is a comparative newcomer to this market and is put out by the Herb Juice-Penol Company, Inc., of Danville, Va. A Danville newspaper in August 1932 reported that James T. Hamlin Jr. had purchased the Herb Juice Company from Ben J. Lifsey of Jackson, Tenn. It is a question whether this concern really makes the "patent medicine," as the original newspaper story was to the effect that the company's products were manufactured by a pharmaceutical concern in the East and would be shipped in "bulk carload lots for preparation, bottling, labeling and distribution."

The Herb Juice Company had for some years put out a nostrum of the alcohol-laxative type under the name of "Miller's Herb Juice." Incidentally, a little over a year later—November 1933—Jackson, Tenn., newspapers reported that a state charter had been granted the Herb Products Company of that city, which the papers declared was a successor to the old Herb Juice Medicine Company, and the information was added that Mr. Ben J. Lifsey was the president of the corporation. This, however, by the way.

Herb Juice, as already stated, was a "patent medicine" laxative, the trade package of which admitted the presence of 11 per cent of alcohol—presumably the only one of the eleven drugs that the National Food and Drugs Act of 1906 requires to have stated on the label. Pow-o-lin is a "patent medicine" laxative whose carton also admits the presence of 11 per cent of alcohol. Both call for dosages of four tablespoonfuls daily—that is, 2 ounces. As the alcohol content of both preparations is about one-fourth the strength of much whisky on the market, it is easily conceivable that persons not used to alcohol might experience a feeling of well-being after taking a dose of half an ounce of a product of this type.

The present Pow-o-lin seems to be advertised mainly, if not entirely, in the South. The claims on the trade package are quite characteristic of the present day "patent medicine" exploiter. Other than stating that the product is a laxative, about the only claim made is the statement:

"For a condition in which a remedy of this kind is indicated, satisfactory results are guaranteed when taken according to directions."

This is about equivalent to saying that for those who need this sort of thing, this is the sort of thing that such people need!

In the newspaper advertising—which, of course, is not subject to the restrictions of the National Food and Drugs Act—the claims, both direct and inferential, are considerably broader. An advertisement in a Williamsburg, Va., paper details the case of Mr. A. M. Robinson, whose picture appears with his testimonial. According to Mr. Robinson, he suffered from gas pains and nervous indigestion, which he thought were due to "a temporarily clogged intestinal tract that was brought on by my constipated condition."

A Norfolk, Va., paper carried on advertisement of Pow-o-lin with the testimonial (and picture) of Mr. R. P. White. Mr. White, like Mr. Robinson, also suffered from gas pains and nervous indigestion, which, he opined, were due to "a temporarily clogged intestinal tract brought on by neglect of constipation." The similarity of some of the phraseology of these two testimonials might cause a cynical reader to wonder if they had originated in the same advertising agency.

As a number of inquiries have come in from physicians and laymen in the Southern states, asking for information on Pow-o-lin, the Bureau of Investigation obtained an unopened, original package of this "patent medicine" on the open market and

submitted it to the A. M. A. Chemical Laboratory with the request that enough work be done on it to indicate the general character of the nostrum. The Laboratory now reports the following:

LABORATORY REPORT

"One original package of Hamlin's Pow-o-lin (Herb Juice-Penol Co., Danville, Va.) was submitted to the A. M. A. Chemical Laboratory by the Bureau of Investigation. In the trade package there was an eight-ounce flint bottle containing 240 cc. (approximately 8 fluid-ounces) of a light brownish liquid, possessing an odor of licorice. The reaction of the mixture to litmus was neutral. The specific gravity at 25 C. was 1.133.

"No information concerning the composition of Pow-o-lin appeared on either the trade package or the label except the following declaration: 'A Vegetable Preparation . . . Alcohol 11%.'"

"Qualitative tests indicate the presence of an extract appearing to be licorice, a laxative (emodin bearing) drug suggestive of senna, and a sugar which reduced alkaline cupric tartrate solution; traces of sulfate and chlorides were noted. Heavy metals and magnesium sulfate were not found.

"It was concluded that Hamlin's Pow-o-lin is essentially a water-alcohol solution of plant extractives flavored with licorice."

In closing, it is worth noting that on Dec. 23, 1937, the Federal Trade Commission reported that the Herb Juice-Penol Company, Inc., of Danville, Va., had entered into a stipulation with the commission to the effect that Pow-o-lin would no longer be advertised as being "capable of relieving biliousness, nervousness, indigestion and countless ills due to constipation, unless these assertions are limited to temporary relief from constipation."

Correspondence

COLLAPSE THERAPY IN PULMONARY TUBERCULOSIS

To the Editor:—In an editorial comment in THE JOURNAL, May 7, it was viewed with surprise that collapse therapy in pulmonary tuberculosis has not resulted in a greater reduction of the mortality to morbidity ratio in the tuberculosis sanatoriums. It was pointed out that Drolet's recent statistical study showed that the ratio of deaths to new cases varied little throughout various communities during a twenty year period. Lest Drolet's statistics be misconstrued as demonstrating the ineffectiveness of collapse therapy, I should like to offer an explanation for this apparent indictment.

There was published in the January 1935 issue of the *American Review of Tuberculosis* a fifteen year survey of artificial pneumothorax treatment in representative American sanatoriums. The results showed that pneumothorax treatment was given in about 10 per cent of the patients. The authors referred only to cases in which there were at least three months of pneumothorax refills. Cases in which pneumothorax had to be discontinued within three months were not included and were considered as unsuccessful attempts. This means that, a priori, about 90 per cent of the patients in the sanatoriums received no suitable pneumothorax treatment and therefore their ultimate progress was in no way a reflection on this form of treatment.

It was further found that in only 38 per cent of the cases in which artificial pneumothorax was given was an effective collapse maintained (disappearance of symptoms and bacillary sputum and closure of cavities), so that the patients who received an effective collapse were indeed a small percentage of the population of the tuberculosis institutions. It is therefore little surprising that the therapeutic results obtained from about 3 per cent of the hospitalized patients did not appreciably influence the general mortality rate.

While there were other collapse therapy measures used besides pneumothorax, the number of patients who received pneumothorax was far greater than those who had thoracoplasties. Likewise, the number of phrenic nerve operations was not large. It may be concluded that the number of patients given collapse therapy was so small in proportion to the total number of tuberculous patients in the hospitals that it could not alter the mortality statistics even over a period of many years.

Collapse therapy is not applicable to all patients with pulmonary tuberculosis, and the percentage of patients eligible for this form of treatment has therefore been small.

The failure of collapse treatment to reduce the general hospital mortality rates does not detract from the brilliant results obtained in individual instances. These isolated results make little impression on large statistical studies but make a definite impression on the observer. During the past decade many advances have been made. Indications for treatment have been broadened, ineffective pneumothoraces have been converted into effective ones by the Jacobaeus operation, and bilateral pneumothorax has been used more extensively than before. More thoracoplasties are being done throughout the tuberculosis centers with little operative mortality. Last, but not least, is the fact that patients are presenting themselves with earlier lesions more easily suitable for treatment.

The small number of cases acceptable for collapse therapy precludes any reduction of the rate on a large scale. As time goes on the number of cases successfully treated will increase and eventually it will register in the statistics.

MILTON B. ROSENBLATT, M.D., New York.

Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

EXAMINATIONS DURING ANTISYPHILITIC THERAPY

To the Editor:—Because of the drive for the eradication of syphilis, I should like to know how often during treatment with bismuth compounds, arsphenamine, neoarsphenamine, tryparsamide and mercury the urine should be analyzed. What are the precautions and contraindications to these drugs as far as can be detected by analysis of the urine? Can you refer me to some literature or give me your experience of the damage that has been produced to the kidneys or other organs when these drugs have been injected and not controlled by urinalysis? Are there other precautions that you advise which the general practitioner should take who is treating or will treat syphilis? How important is the weight and blood pressure? How frequently should the eyes be examined? How often should a Wassermann test or a spinal fluid examination be taken?

P. J. IMPERATO, M.D., Brooklyn.

ANSWER.—The literature covering damage to tissue from the arsphenamines, tryparsamide, bismuth compounds and mercury is an enormous one and is summarized in such textbooks as those of Moore, J. E.: *The Modern Treatment of Syphilis*, Springfield, Ill., C. C. Thomas, 1933, and Stokes, J. H.: *Modern Clinical Syphilology*, ed. 2, Philadelphia, W. B. Saunders Company, 1936.

As far as the kidneys are concerned there is no evidence that the arsphenamines or tryparsamide, when given to persons in good general physical condition, in average therapeutic doses and when grave arsenical reactions such as dermatitis and jaundice are not produced, have any appreciable effect on the blood pressure or kidney function as measured by the phenolsulfonphthalein output or blood chemistry or on the function of other vital organs.

In therapeutic doses, furthermore, neither bismuth nor mercury produces persistent renal damage. Mercury is somewhat more likely than bismuth to cause a mild toxic nephrosis.

With any of the antisyphilitic drugs—arsenicals or heavy metals—there may be transitory albuminuria and cylindruria during treatment, though instances of serious and permanent renal damage which can be definitely and directly attributed to the therapeutic use of these drugs are exceedingly rare.

Many textbooks advise the weekly examination of the urine during arsenical treatment and immediate discontinuance of treatment in the face of mild albuminuria or cylindruria. In actual practice such frequent examinations of the urine may not be necessary, nor may it be essential to abandon treatment in the presence of mild to moderate albuminuria or cylindruria without other evidence of impairment of renal function.

All antisyphilitic drugs and particularly the heavy metals should be used with caution in the face of a previously existing nephritis or nephrosis.

The question concerning other precautions which should be taken by the general practitioner who is engaged in the treatment of syphilis is so generally phrased as to be unanswerable within the limitations of space of this column. The inquirer is advised to consult modern textbooks on the subject of the treatment of syphilis, references to two of which are given.

The weight is an important guide as to drug tolerance and caution should be exercised in antisyphilitic treatment in patients who lose weight rapidly during its progress. Blood pressure is relatively unimportant. Treatment should of course be cautious in the face of severe hypertension, especially if of the malignant variety, and in hypertension due to renal disease.

Repeated examinations of the eyes is unimportant except in the case of tryparsamide.

A blood Wassermann test may be used as a treatment guide in all patients with syphilis and, in general, should be done at the beginning and end of each arsenical course. The details of interpretation of such tests will be found in modern textbooks.

The spinal fluid should be examined in all patients with syphilis; in those with early syphilis at the end of about six months of treatment; in those with late syphilis at the start of or as soon as possible after beginning treatment. If the spinal fluid is abnormal, repeat examinations during treatment are essential.

PREGNANCY IN DUPLICATE UTERINE HORNS

To the Editor:—While performing a vaginal hysterectomy, I found double uteri, complete with tubes and ovaries for each. There was evidence of a pregnancy in each. The patient is the mother of four children. Is this condition unusual or rare?

M.D., Arkansas.

ANSWER.—Partial or complete duplications of the reproductive tract are not uncommon. This is due to the fact that the fallopian tubes, uterus and most of the vagina are derived embryologically from a fusion of the müllerian ducts. The extent of the duplication, therefore, will depend on the extent of the müllerian derivatives that have not fused. A double uterus may or may not be associated with a double vagina. In all cases, however, there are only two fallopian tubes, one arising from each horn. There are rarely more than two ovaries, one on each side.

A pregnancy in each of the two separate horns at the same time is indeed an unusual occurrence. To make this possible two separate ova would have to be fertilized at the same time and each fertilized ovum would have to pass down a separate fallopian tube to the respective uterine horn. Such a condition has been reported in the literature.

ERGOTISM AND RYE BREAD

To the Editor:—I am allergic to both wheat and yeast and as a result consume large quantities of Swedish rye bread and rye crisp. Is there any danger of ergotism?

M.D., Pennsylvania.

ANSWER.—A search of the literature has revealed no reports of ergotism in man in the United States as a result of the consumption of rye bread. Several English papers deal with the subject:

Morgan, M. T.: Report on an Outbreak of Alleged Ergot Poisoning by Rye Bread in Manchester, *J. Hyg.* 29: 51 (April) 1929.

Robertson, James, and Ashby, Hugh T.: Ergot Poisoning Among Rye Bread Consumers, *Brit. M. J.* 1: 302 (Feb. 25) 1928.

Stockman, Ralph: The Cause of Convulsive Ergotism, *J. Hyg.* 34: 235 (June) 1934.

Stockman, Ralph, and Johnston, J. M.: Cereal Food Poisoning and Its Relation to the Etiology of Pellagra, *J. Hyg.* 33: 204 (April) 1933.

Dilling, Walter J., and Kelly, R. E.: Gangrene Following the Use of Ergotized Rye Bread, *Brit. M. J.* 1: 540 (March 31) 1928.

Morgan discusses the agricultural methods employed to prevent a fungous infection of the grain. In his opinion the ergotized grain may be eliminated in the milling process by the use of proper screening and purifying machinery. We have no information about the methods used in this country. It is probable that the United States Department of Agriculture may be able to provide some information relative to this subject.

LILLIPUTIAN HALLUCINATION

To the Editor:—A white man, aged 42, a postal clerk, has complained for the past two years of a feeling of weakness when he is at work. He becomes nervous so that he is unable to write a money order. His sense of dimensions has become distorted, especially of height, and a table 3 feet high appears flattened to about a foot. The attacks last from fifteen minutes to an hour or more. His physical examination is negative except for a slight retraction of the left ear drum. His hearing is good in both ears. The attacks suggest a condition similar to an overdose of insulin.

M.D., New Jersey.

ANSWER.—The attacks, which are incompletely described, suggest a possible aura for a focal lesion in the occipital or temporal lobe of the brain. This lesion may be neoplastic, vascular or inflammatory. A detailed neurologic examination is indicated together with complete ophthalmologic and otologic investigations to include funduscopy, visual fields, and caloric and turning tests. If no focal localizing signs are found it may be necessary to do either a ventriculogram or encephalogram. Neurosurgery is indicated if the lesion is neoplastic or gives any suggestion of it. This type of symptom, that is, defect in dimensions or size, is known as a Lilliputian hallucination. If the lesion is inflammatory or vascular the patient should receive some sedative such as sodium bromide. The weakness, nervousness and inability to write may, on the other hand, be due to some disturbance of the cardiovascular system and not to any cerebral disease.

POSSIBLE HYPERPARATHYROIDISM IN BOY

To the Editor:—A boy, aged 12, heretofore in splendid health, has noticed during the last four months that whenever he gets warm he becomes weak and faint and once he actually lost consciousness. His appetite is poor; he has lost 15 pounds (7 Kg.) in the last three months. During this time he has had three boils on his right hand, something he has never had before. At the beginning of his illness he had some pain around the umbilicus after he ate, which continued for two or three weeks, but since he has been eating less there has been none of this pain. His bowels have moved regularly. Physical examination reveals that he is well developed and nourished, is 5 feet three-fourths inch (154 cm.) tall and weighs 101 pounds (46 Kg.); the weight had been 115 pounds, or 52 Kg., the temperature is 99.2 F. and the blood pressure is 120 systolic and 80 diastolic. Physical examination was essentially negative except for a cardiac rate of 100 and a heart which sounded somewhat overactive. There was a blowing systolic murmur heard at the aortic area when the patient was lying down but not in an erect position. He appeared quite nervous and seemed a little hyperactive. Urinalysis showed a faint trace of albumin. Blood counts were as follows: Nov. 24, 1937, hemoglobin 94 per cent, red blood cells 5,420,000, white blood cells 7,080, polymorphonuclears 60 per cent, lymphocytes 25 per cent, mononuclears 6 per cent, eosinophils 6 per cent, basophils 3 per cent, smear negative; December 17: hemoglobin 95 per cent, red blood cells 5,710,000, white blood cells 9,480, polymorphonuclears 47 per cent, lymphocytes 37 per cent, mononuclears 3 per cent, eosinophils 11 per cent, basophils 2 per cent; December 21: red blood cells 5,130,000, white blood cells 6,800, polymorphonuclears 46 per cent, lymphocytes 44 per cent, mononuclears 3 per cent, eosinophils 7 per cent. X-ray examination of the chest showed marked hilar infiltration but no indication of active tuberculosis. The sedimentation rate was 4 mm. per hour, the basal metabolic rate plus 3 per cent, the fasting blood sugar 83 mg. per hundred cubic centimeters, and the blood calcium 14 and 13.8 mg., tests being taken at an interval of a week. Because of the eosinophil count, three stool examinations have been made by competent laboratory men, without any parasites being found. Do you think this boy might have hyperparathyroidism? The blood calcium content suggests it. There has been no pain which is usually associated with bone changes in parathyroid tumors and, although no roentgenograms have been taken of the long bones, the bony structure of the chest and shoulders appear normal. An active rheumatic infection seems to have been ruled out by the sedimentation rate and the fact that subsequent examinations show a cardiac rate ranging from 72 to 90. Can you suggest any other diagnosis?

M.D., Tennessee.

ANSWER.—Hyperparathyroidism is surely suggested by the blood calcium levels. Blood calcium levels that remain persistently above 11.5 mg. should always be considered abnormal. The principal objection to this diagnosis is in the age of the patient. The age does not preclude such a diagnosis but it speaks strongly against such a possibility. In this case the serum calcium content should be further observed. A persistently high calcium exists for some time preceding the usual symptoms of hyperparathyroidism. A blood phosphorus determination should be made. The combination of high calcium and low phosphorus is extremely suggestive. The plasma phosphatase will be elevated also if there is detectable bone change. The urinary calcium is elevated in hyperparathyroidism but may be elevated also in other disease states. Because of the seriousness of parathyroid tumor, roentgenograms of the long bones should be made. There are detectable bone changes before the typical cysts are formed. Parathyroid tumors are rarely palpable and sometimes are difficult to find at operation. Although the sedimentation rate argues against active infection, a number of possibilities suggest themselves and cannot be lightly discarded. A Mantoux or Pirquet test should be

done. This boy is still within the age limit when hilar tuberculosis is not uncommon. A subacute bacterial endocarditis is a possibility but not a likely one. An infectious mononucleosis should be excluded. The lymphocyte count is scarcely high enough to warrant this diagnosis but a careful differential count and a heterophile antigen test should settle the question. The basal metabolic estimation should be repeated. The heat intolerance, the weight loss, the nervousness and the tachycardia are suggestive of a hyperthyroidism. The search for parasites and ova should be continued.

The fainting attacks, with one actual syncope, raise the suspicion of the effort syndrome or autonomic imbalance. Again the age of the patient makes this unlikely, but such a condition would account for all the symptoms except the hypercalcemia. One may find statements which allege that the white count as given here, that is to say, a normal total count with a relative lymphocytosis, a relative leukopenia and an eosinophilia, is sufficient to warrant such a diagnosis. The diagnosis may be safely made only when the other possibilities are ruled out.

None of these conditions, however, are consistent with persistent hypercalcemia.

WRITERS' CRAMP

To the Editor:—A man, aged 35, an auditor, is facing the loss of his job because of writers' cramp. In addition to the uncontrollable cramp he is bothered with flushing of the thenar and hypotheran eminences of both hands and occasionally slight pain in his right shoulder (he is right handed and does not stammer). His general health is excellent. There is no evidence of focal infection. There is no twitching or wasting of muscles. All laboratory tests are negative. He does not drink or smoke, sleeps well and lives a happy family life. The use of common sedatives and hypnotics has not been helpful.

M.D., California.

ANSWER.—In true writers' cramp there is no difficulty in using the hands for anything except writing with pen or pencil. If there is difficulty with every kind of use of the hands, one must look for neuritis, muscular atrophy, paralysis agitans, tenosynovitis or other organic disease. A person with writers' cramp can use a typewriter without difficulty and should do so as much as possible. If a case is not far advanced, relief may be obtained by teaching the person to write in the correct manner and the use of large cork or rubber pen holders. The cramp is often brought about by gripping the pen tightly and pressing down on the paper with unnecessary force. Attention should also be paid to the light, to the position of the paper and to the height of the desk or table. If a case is far advanced, a period of rest from writing is necessary. After this, care should be taken to observe the rules about proper writing. It is, of course, desirable for victims of this trouble to learn to write with either hand.

DIAGNOSIS OF BRAIN LESION IN CONVULSIVE SEIZURES

To the Editor:—A white man, aged 45, married, a druggist, had a severe convulsion May 16, 1936. Following the convulsion he had attacks, five or more daily, in which he was paralyzed in the left half of the body for about thirty seconds, during which time he had a profound sensation of swelling on the affected side, this sensation being more pronounced in the eye, chest and arm. With the exception of an intermission of two months last summer, he has had from three to five or more attacks daily since the onset. The mental condition of the patient is apparently normal. His weight is stationary, his appetite good and he attends to his work as usual but is nervous and worried because of his condition. The attacks come on quickly after a short prodromal feeling and he has to sit down or catch on something without delay to prevent a fall. Incidentally he has been hurt several times and has had one automobile wreck because of these attacks. Have you any suggestions for diagnosis or treatment?

M.D., South Carolina.

ANSWER.—This patient apparently has an organic disease on the right side of his brain involving the postcentral gyrus and the surrounding brain tissue. The lesion may be a brain tumor, a brain abscess, a cyst involving the cortex and meninges, an inflammatory lesion, a gumma, a syphilitic brain disease or an injury to the right cortex, or the condition may be arteriosclerosis, alcoholism or other less common disorder. The patient should have a neurologic examination, because some signs pointing to a lesion in the right side of the brain will be found. If there is no choking of the disk, an encephalogram should be made to determine the size and location of the lesion by means of ventricular deformity, pineal body shifting and presence of internal and external hydrocephalus. When this is being done a complete examination of the spinal fluid should be made, including manometric measurements to include the pressure of the spinal fluid, the amount of rise of pressure as measured by a manometer from coughing, straining and pressure on each jugular vein, a cell count, globulin determination, Wassermann test and a colloidal gold test. If there is a

choked disk present, a ventriculogram should be made. If the air studies indicate a space-occupying lesion, neurosurgical intervention is indicated for the purpose of exposure and removal of all the lesion that is possible. If the condition is not neurosurgical an anticonvulsant regimen is necessary. This is the giving of sufficient sodium bromide or phenobarbital until the patient becomes free from attacks. When that dose is determined, the patient is kept on it for at least five years. He should not drive a car, swim, climb heights or do anything that is hazardous to himself or to any one else.

OSTEO-ARTHRITIS

To the Editor:—A woman, aged 57, weighing 165 pounds (75 Kg.), past the menopause, began having intermittent attacks of pain along the medial side of the knee joints, first one knee and then the other, six years before I saw her. The attacks until nine months ago never occurred in the two knees at the same time, never lasted more than three weeks and were never severe. She has never received an injury to either knee. The pain never has kept her from work. In April 1937, while she was having sore throat (which was unaccompanied by fever and not sufficiently severe for her to go to bed) she had the same pain in the two knee joints at the same time, much more severe than ever before. She has not been free from pain for a whole day since then. The pain is worse at night and is aggravated when she presses or touches one knee against the other. Walking has little or no influence on the pain. Weather conditions do not influence the pain. When she sits in one position for more than five minutes she has a stiffness in the knee joints with pain on rising, and the pain continues for several minutes until she has walked around for a few minutes and become "limbered up." The condition is gradually getting worse. There is a tender streak along the inner side of the knee joints, running horizontally backward and forward, exactly over the line of the joint. There are no other tender areas about the knee joints, or any other abnormalities. Anteroposterior and lateral roentgenograms of both knee joints show the same condition for the two joints: osseous overgrowth of the inner corners of the knee joints. There is no narrowing of the joint spaces or other evidences of rheumatoid arthritis. No foreign bodies were seen in the picture, which was purposely slightly light for soft tissue detail. Walking does not make the pain worse, nor does standing (she is a schoolteacher). With the leg straight and the knee fixed, outward pulling of the leg causes acute pain at the inner side of both knee joints. The opposite of this, that is, with the knee fixed, and inward pulling of the leg, causes no pain.

L. A. CROWELL JR., M.D., Lincolnton, N. C.

ANSWER:—The case is probably one of osteo-arthritis (senescent) with associated periarticular fibrositis. The cartilage is undoubtedly degenerating and fibrillated but not yet eroded or destroyed sufficiently to permit loss of the joint space. It would be well to have an estimation of the erythrocyte sedimentation rate and a differential blood smear to determine the percentage of nonfilamented cells. In atrophic (rheumatoid) arthritis the sedimentation rate is generally definitely elevated above 20 mm. (one hour) and the incidence of nonfilamented cells is more than 16 per cent. In osteo-arthritis the sedimentation rate is usually normal or nearly normal and the percentage of the nonfilamented cells is often (in 55 per cent of cases) normal.

Osteo-arthritis commonly affects elderly women about the time of the menopause and produces symptoms that may be persistent and progressive or intermittent. Studies by Garvin (1927), Keefer (1933, 1934), Bauer and Bennett (1933, 1934) and others have shown that this type of arthritis affects almost 100 per cent of persons more than 45 or 50 years of age but that only a small percentage have symptoms. The cause of the disease is unknown but it is believed to be a process of age, wear and tear and not primarily the result of infection. The various direct and indirect evidences of infection which are so commonly present in atrophic arthritis are practically always absent in osteo-arthritis.

The symptoms are generally in direct proportion to the amount of trauma endured by affected joints, whether the trauma is that of occupation or obesity or that incident to recreational pursuits. Thus patients who use their joints excessively—laborers, mechanics, farmers, women who do much housework or gardening—may have symptoms, while others may have the disease and yet remain asymptomatic. Symptoms of obese persons develop particularly in weight bearing joints, knees and the lower part of the spinal column. Patients whose threshold for pain has been lowered, by the menopause or otherwise, are more troubled than others. Pain is generally mild or moderate and intermittent. It may be subacute at times. The cause of spells of subacute pain is unknown. Excess trauma usually is blamed, but some believe that a superimposed infection may be responsible, as the case under consideration suggests. Pain in a previously affected but relatively symptomless joint may be produced by an alteration in the mechanics of the joint, by the formation of loose bodies therein, or by the pinching of sensitive synovial villi. Bauer and Bennett (1936) explained the pain thus: When marginal articular tissue is proliferating, the periosteum may become elevated and cause pain; once the marginal osteoid tissue ceases to proliferate and

becomes calcified, pain may also cease. The patient referred to is experiencing "articular jelling"—stiffness after rest, relieved by limbering up. This may be attributable to capsular or periarticular fibrositis, a common accompaniment of osteo-arthritis. Symptoms of periarticular fibrositis often are brought out only, or chiefly, when the articular capsule is put on the stretch. Moderate activity often does not aggravate the symptoms of hypertrophic arthritis; in some cases it apparently does not increase the symptoms but later the joints ache more at night, probably the delayed effect of the day's trauma to joints.

The prognosis is good, although Heberden's nodes may develop on the terminal phalangeal joints of the fingers and hypertrophic arthritis of the midcervical or lower lumbar parts of the spinal column may appear. Osteo-arthritis is not associated with the constitutional reactions (loss of weight, extreme fatigue, anemia), which may become profound in atrophic arthritis. Flexion deformity, ankylosis and serious disability and crippling do not occur. The condition should be considered a nuisance, not a calamity; it should be accepted philosophically as one of the prices of living, one of the minor infirmities of age. It often becomes asymptomatic eventually, and treatment will hasten this stage. The treatment of primary importance is reassurance of the patient that serious disability is not impending. Reduction of trauma by avoidance of unnecessary walking or climbing stairs, by the use of a semielastic support for the knees, the proper type of shoes to avoid knee strain and the avoidance of obesity are imperative. The daily use at home of simple physical therapy (a heat lamp, mild nontraumatizing exercises) gives considerable relief. Roentgen therapy provides analgesia in some, but not in all, cases. Vaccines, special diets, sulfur and gold salts are apparently valueless. Obvious foci of infection which can readily be removed should be removed; others should be left alone.

SKIN STAINING FROM DIPICRYLAMINE

To the Editor:—Please give me information on the treatment of skin discoloration with dipicrylamine powder. A laboratory worker was exposed to this substance five months ago.

CLIFFORD F. LEET, M.D., Horseheads, N. Y.

ANSWER:—The fact that the skin has remained stained for more than five months argues that the chemical penetrated the epidermis and reached the deeper structures of the skin. A stain that affects only the epidermis will fade gradually and disappear.

Some substances are capable of penetrating the epidermis and in effect tattooing the skin. Such materials generally have to be used over an extended period of time and rubbed into the parts. Thus, Goeckerman reported permanent darkening of the skin from metallic substances in cosmetics which became deposited in the skin after years of usage.

If the chemical which becomes anchored in the lower layers of the skin has the property of darkening on standing, its staining of the skin may be expected to deepen in time. Some aminophenols, of the class such as the offending agent under consideration, may darken on exposure to air and light and thus intensify the stain of the skin in which they are fixed after a time.

The problem of its removal is akin to that of ordinary tattooings. The use of carbon dioxide snow might be attempted on a small patch, but this method hardly lends itself for use over a large area. This subject was discussed in *THE JOURNAL*, June 18, page 2100.

PHOSPHATE AND URATE KIDNEY STONES

To the Editor:—A white man, aged 32, during the last six years has had three small renal calculi, visualized by x-ray examination and small enough to have been passed through the ureters and the urethra. Although he has been drinking ten or twelve glasses of water daily, the urine always shows a large deposit of crystals. The deposit appears to be about the same quantity whether the urine is acid or alkaline. Two of the calculi have been of phosphate composition and one of urate. He has been on a low purine and low mineral diet at various times without any apparent change in the amount of crystalline deposit in the urine. The condition is complicated by a chronic nonspecific prostatitis, at times acute, apparently after an upper respiratory infection, which has responded on two occasions to sulfanilamide therapy. On large doses of vitamin A there has been no change in the urine. The renal function as tested by dye excretion, concentration test and blood chemistry is normal. The blood calcium and phosphorus levels are also normal. The urine obtained by ureteral catheterization has been free from pus. Is there likely to be any relationship between the chronic prostatitis and the formation of the renal calculi? Is there any dietary regimen which might prevent the excretion of the large amounts of crystalline material?

ALEXANDER G. SILBERSTEIN, M.D., New York.

ANSWER:—In view of the fact that the calculi have been of phosphate composition and also of urate composition on one occasion, the continued use of an acid-ash diet with a low purine content would be advisable. This dietary regimen will probably reduce the amount of crystalline deposit in the urine

Book Notices

Fifty Years a Country Doctor. By William N. Macartney, M.D. Cloth. Price \$3.50. Pp. 584, with portrait. New York: E. P. Dutton & Company, Inc., 1938.

This is the story of a doctor who began life in a small town in New York on the St. Lawrence River, got his preliminary education in the schools of the town, went to medical school for two years in New York City, had an internship in Bellevue Hospital, and then went back to his home to practice in order to be with his parents in their old age. Eight years later, when they had died and he had accumulated enough to cover the lean years that he would have in establishing himself in New York City, where it was his original ambition to practice, he went back there, looked around long enough to decide that to practice in Fort Covington, among the people he knew, was his choice, went back home and has devoted the last forty years to practice there. He graduated in 1888. The town had a population of 600 then; in 1936 it had a population of 764, so this is the story of a real country doctor. It is a story also of a vigorous mind, alert, quick, independent. The book describes a fine life. He is a sympathetic man, but the book has no sob-stuff. It is full of interesting episodes with many good stories—told briefly—and vivid accounts of practical experiences in taking care of difficult emergencies, usually alone.

After a good chapter on his youth, the next chapters are devoted to his experiences at medical college and at Bellevue. It happens that the reviewer was a member of the same class in the same medical school, and he can testify to the accuracy of the descriptions of conditions. The brief sketches of the members of the faculty are by one who has more than the ordinary capacity for hitting off the characteristics of men and make one more inclined to take at their face value all of the later statements. Once in a while, however, a mistake is found, as when, apropos the blizzard in New York in 1888, he said "In those days we had no weather bureau" (p. 37).

The next seventeen chapters are short—as are all the chapters in the book—and are devoted to the general topics that concern the doctor, particularly the country doctor: beginning in practice, advances in technic, characteristics of patients, fees, the dead beat and things of that sort. They are full of worldly wisdom, in the best sense of that term, that has been matured by long experience in a busy important life. The remainder of the book is devoted to consideration of the common diseases and contains many acute observations and wise practical suggestions.

He is a cheerful soul and must have enjoyed life. His style is sprightly, he writes good clear English, and the book is entertaining reading. It is a fine exposition of the attractiveness of a country practice to a competent man. The first fifteen chapters, only 135 pages of easy reading, ought to be read by all senior medical students.

Lettres à un jeune praticien sur les maladies de l'anus et du rectum. Par Roger Savignac. Préface du Professeur A. Gosset. Paper. Price, 26 francs. Pp. 129. Paris: Masson & Cie, 1937.

The author's plan of presentation in this book is indeed unique. Presumably he has been asked by a young doctor for his advice and experience relative to the more common anorectal diseases. Savignac's background is a twenty year period of service as director of the proctologic clinic of the Salpêtrière. He makes his contributions to the "young practitioner" in the form of a series of letters, fourteen in all, each one covering a specific subject. The work serves admirably first to make the practitioner conscious of anorectal disease and then to instruct him in the performance of a thorough examination, both digital and endoscopic. The author considers his patient to have a serious ailment until such has been ruled out by thorough investigation. He has placed proper emphasis on the serious nature of chronic ulcerative colitis and of inflammatory rectal stricture. With regard to the etiology of the latter entity he feels that our present conception is still hypothetical. The author has purposely avoided discussion of surgical technic other than that pertaining to the agents of physical therapy such as medical and surgical diathermy. As a result, so much emphasis is placed on the ambulatory or office treatment of hemorrhoids,

fissures and fistulas that the work smacks a bit of the "ambulant proctologist." One cannot help but fear that the young doctor will be led to place too much faith in nonsurgical methods and that he may not be brought to realize the full significance of anorectal infections. No one cares for unnecessary surgical procedures. However, most patients suffering from fissures, fistulas or complicated piles are deserving of hospitalization for proper surgical treatment. The sections on fissure and fistula are at once both pleasing and disappointing. With regard to anal fissure the author advocates three forms of treatment: electricity (diathermy), local injections and dilation under anesthesia. Anal abrasions might be amenable to such therapeutic endeavors, but true anal fissures, in the experience of well trained proctologists, yield only to proper surgical treatment fortified by thorough and persistent after-care. In his "letter" on anal fistula the author emphasizes surgery as the only adequate form of treatment. However, when mention is made of "blind" fistulas, of injections of methylene blue to facilitate visualization of the tract, and of x-ray studies after injection of colloidal thorium dioxide or of iodized oil one cannot help but feel that the author does not possess a full conception of the pathogenesis of fistula-in-ano. The final letter is a brief review of the causes of "anorectal" hemorrhage in the order of their frequency and significance. The book is a valuable addition to the literature of diseases of the anorectum and colon. It should be read by the general practitioner, by the gastrointestinal internist, by the general surgeon and by the rectal surgeon.

Physical Exercises for Asthma. Approved by the Honorary Medical Advisory Committee of the Asthma Research Council. Second edition. Paper. Price, 1s. Pp. 32, with illustrations. London: Asthma Research Council, King's College, 1937.

The brochure is written for the layman as well as for the physician. The purpose of the exercises described, as stated in the introduction, is to correct the shortening of the muscles of respiration which occurs in asthma. The contraction of these muscles produces the "barrel-shape" chest. Because of this the lungs remain distended even when the patient is free from attacks. In early cases the purpose is to prevent such occurrence. In chronic cases the attempt is to restore the chest cavity and lungs to normal size. In asthma the tendency is to breathe almost entirely with the upper part of the chest, the lower part of the chest remaining relatively immobile. The diaphragm moves little. The exercises are aimed to teach the patient "diaphragmatic breathing," to use the abdomen and lower part of the chest as well as the upper part of the chest. Three groups of exercises are described. Each is simply explained and adequately illustrated by reproductions of photographs. There are five elementary exercises, five advanced exercises and four children's exercises. While each is intended to exercise a different group of muscles, the breathing principle is the same in all—a short inspiration through the nose, followed by a gentle, prolonged expiration through the mouth. During the expiration the patient makes an F or S sound with the lips or teeth to fix his attention on blowing out as long as possible. During inspiration the upper part of the chest must remain still, the abdominal wall rising during this phase. With expiration the abdominal wall contracts slowly. It is recommended that exercises be practiced for at least ten minutes twice a day. The value of exercises as an adjunct in the treatment of asthma has been recognized for many years. As pointed out in this pamphlet, they should, however, be supervised at the start by a trained person. While these exercises can be of help, they will be sure to fail unless the physician or a trained gymnast supervises them until the patient does them correctly.

Sixteenth Hospital Yearbook. 1938 Hospital Purchasing File: Directory of Products, Manufacturers' Catalogs, Purchasing and Other Reference Data. Boards. Price, \$2.50. Pp. 838, with illustrations. Chicago, Illinois: Modern Hospital Publishing Co., Inc., 1938.

This book is a standard reference on hospital buying. It contains extensive catalogues on clinical and scientific apparatus, general furnishings, food service equipment, laundry supplies and construction materials. To hospital executives it also presents a valuable section on purchasing and other reference data relative to the planning of ward and private services, surgical facilities, outpatient, maternity, pediatric and psychiatric departments, the tuberculosis unit, contagious disease wards, x-ray and physical therapy departments, laboratories,

the nurses' home, the school of nursing, kitchens and the hospital laundry. Special articles give authoritative information on the quality and performance of hospital equipment and supplies and should be of distinct value to purchasing agents. There is a useful description of typical hospital positions, a list of state, sectional and Canadian hospital associations, current hospital statistics, per capita costs and occupancy figures. The administrative departments of hospitals will find the Yearbook a valuable source of reference. Its use is enhanced considerably by a convenient index of catalogues and advertisements, a directory of hospital products covering 217 pages, a guide to purchasing and other reference data, and useful check lists of departmental equipment and supplies.

Untersuchungen über die Augenhöhlen des Menschen in verschiedenen Lebensaltern. Von Per Pallin, Med. Lic. Inauguraldissertation welche mit gehöhriger Genehmigung der weltverfahrenen mediznischen Fakultät zu Uppsala verteidigt wird. Sonderabdruck aus Acta Societatis medicorum Suecane Bd. LXIII, 1937. Paper. Pp. 107, with 22 illustrations. Stockholm: Isaac Marcus Boktryckeri-Aktiebolag, 1937.

In this dissertation from the University of Uppsala, produced under the direction of Professor Berg, ophthalmologist, and Professor Agduhr, histologist, Pallin investigates the evolution of the orbit from fetal to adult life. Ample material at various ages has been systematically analyzed according to accepted modern biometric procedure, and the data provided should facilitate a better visualization of the mechanism of orbital development. At the beginning of the second month of embryonic life the eyes look laterally, reminiscent of our phylogenetic ancestry, and the optic stalks are in line with each other. The angle is reduced to 105 degrees in the next month, reaches 71 degrees at birth, and converges from 3 to 5 degrees further by maturity. In late childhood the expansion of the facial skeleton increases the orbital and interorbital width much more than the distance between the optic foramina, occasioning consequently a forward divergence of the orbital axes and of the associated cone of ocular muscles. In this connection the author seriously considers the contention made by Weiss forty-five years ago that this developmental process accounts for the occasional spontaneous correction after puberty of low degrees of convergent squint but fails to discuss the various other anatomic and physiologic factors to be considered. In view of these changing relations of the orbit from birth to maturity, the associated changes involved in maintaining parallel vision is an interesting inquiry that should repay further study.

The Basis of Tissue Evolution and Pathogenesis. By Albert A. Gray, M.D., F.R.S.E. Cloth. Price, 7s. 6d. Pp. 92, with 12 illustrations. Glasgow: Jackson, Son & Company, 1937.

Those who are conversant with Albert A. Gray's large and comprehensive two volume work on "The Labyrinth of Animals" will little wonder that this clinician and investigator should subsequently be writing on problems pertaining to evolution. His extensive studies on the comparative anatomy of the intricate and delicate inner ear naturally led Gray to ponder over the problems of origin and variation. Then too his observations and contributions in the field of clinical otology, especially otosclerosis, afforded opportunity for reflection in the field of pathogenesis. Whether or not entirely in accord with the concept of Gray on tissue evolution and pathogenesis, one cannot but admire him for his spirit and industry in subjecting his clinical problems to scientific laboratory scrutiny.

From the beginning, Gray appears to have given thought to the manner in which the structure of plants and animals may have evolved in direct relationship to environment. He had intended to publish a book giving his matured views on this subject but died before this could be fully consummated. Fortunately he left a manuscript, and his younger son, conversant with the subject matter, assumed the responsibility for publishing posthumously his father's last work.

After the foreword, the book is divided into four parts, on the basis of tissue evolution and pathogenesis, evolution of the tissues, repair, and evolution of tissues and structures. At the outset Gray deprecates the narrow view of pathogenesis often held, aptly saying that in all pathologic processes there is present a soil and a seed. He holds to the concept that disease processes are merely one manifestation of biologic processes and that they cannot be considered apart from the ordinary problems of biology. When he speaks of an injuring agent, he has in mind

the environment of the organism or tissue. The point is made that the direct observation of the behavior of a tissue toward an injuring agent and its evolutionary fate must be impossible at all times, since the process itself must extend over vast periods. Gray here speculates "upon the evolution of the tissues, using as a basis the accumulated knowledge of biological and pathological processes, and particularly the process of repair in living tissue." He appreciates that "from the very nature of such problems, some amount of speculation is absolutely necessary" but says that "even then it will be possible to bring considerable evidence from observed facts in support of the views advanced."

Gray feels that the process of repair acquires a very real biologic significance, quite apart from the usual teleologic explanation so widely accepted. He suggests that the change in the character of a given tissue, the metaplasia, is the basis of the evolution of species and is a fundamental factor in pathogenesis. He would substitute the concept of "induced variation" for the doctrine of "spontaneous evolution." He makes much of injury, that is, environment, and the fact that ultimately environmental factors may lead to fixed and new conditions of tissues, with even a heritable tendency. He attempts to correlate his hypothetical concepts with his daily clinical problems.

In the foreword of the book, the wish is expressed that those who read its pages will do so with insight and imagination. The volume merits reading.

Theoretical Principles of Roentgen Therapy. Edited by Ernest A. Pohle, M.D., Ph.D., F.A.C.R., Professor of Radiology, University of Wisconsin, Madison. Foreword by W. Edward Chamberlain, D.S., M.D., F.A.C.R., Professor of Radiology in the Temple University School of Medicine, Philadelphia, Pa. Cloth. Price, \$4.50. Pp. 271, with 132 illustrations. Philadelphia: Lea & Febiger, 1938.

This book is a collective work. The demand for knowledge of the physical, chemical and biologic basis of roentgenology has increased. The physics of x-rays by Stenstrom Newell provides a review of the various aspects of therapeutic x-ray equipment; he describes the instruments for calibration (tubes, filters and other materials necessary for roentgen treatment, such as tables, control stands and the proper choice of space). Taylor and Pohle consider dosimetry. Superficial and depth doses and the relation to the percentage volume are distinctly treated, and the difference in their application is described. The importance of a definite plan of treatment is well developed. In a further chapter, Ward discusses radiology and radiopathology; that is, the reaction of cells, skin, tissue, blood and internal organs to the x-rays. Finally, Taylor develops the idea of the tolerance dose and protection from the x-rays. The recommendations of the Advisory Committee on X-Ray and Radium Protection have been copied verbatim.

An Atlas of Gas Poisoning. Reprinted by the Home Office (Air Raid Precautions Department). Second edition. Paper. Price, 35 cents. Pp. 16, with 11 illustrations. New York: British Library of Information; London: His Majesty's Stationery Office, 1937.

This booklet is one of a number of excellent handbooks and pamphlets issued by the home office of the British government, presenting various phases of warfare as it may affect the civilian population and intended primarily for civilian use. From its rather broad title one would perhaps expect a more comprehensive treatment of the subject, for, with the exception of a single plate depicting a rare case of thrombotic gangrene of the foot following chlorine poisoning, the pamphlet confines itself to the effects of but two warfare agents, phosgene and mustard. Presenting these, however, as respectively representing pulmonary irritants and vesicants—the two classes of chemical warfare agents used primarily for the production of casualties among personnel—the atlas handles them well: ten colored plates, three relating to phosgene and seven to mustard, picture the principal clinical and pathologic effects of these two agents; and the accompanying descriptive text is clear and concise. The pamphlet is a second edition, the first having been published in 1918 for use by medical officers serving with the British Expeditionary Force. As stated in the foreword, the present edition reproduces substantially the same text and drawings as the first edition, with minor textual revisions in the light of later knowledge; and its primary aim is that of general instruction for doctors not already familiar with the subject. Toward this end, the atlas is an authoritative and valuable help.

Précis de chimie organique. Par Victor Grignard, membre de l'Institut (prix Nobel). Publié par les soins de Roger Grignard, ingénieur-chimiste E.C.I.L., préparateur à la Faculté des sciences de Lyon, et Jean Colonge, ingénieur-docteur, chef de travaux à la Faculté des sciences de Lyon. Préface de M. le Professeur G. Urbain, membre de l'Institut. Cloth. Price, 175 francs. Pp. 774. Paris: Masson & Cie, 1937.

Victor Grignard, Nobel laureate, commands such respect among organic chemists that anything bearing his name must be treated with more than ordinary consideration. It is true that this book is posthumous, but it is completed as a token of respect and veneration. One would expect, therefore, and finds, unusual care and precision in the work. It is stated in the introduction that the book reproduces faithfully the course given by Victor Grignard, each year, to candidates for the certificate of general chemistry in the School of Industrial Chemistry at Lyons. It is therefore a textbook the worth of which is proved. Organic chemistry is a subject as logical as geometry. No unusual order of presentation is to be expected or found. The order is much the same as is found in standard textbooks. Following a chapter on general fundamental principles, the following plan is followed: aliphatic and cyclic hydrocarbons, organic metallic compounds, alcohols, phenols, thioalcohols and thiophenols, aldehydes, ketones, sugars, cetenes, acids, amines, albuminoids, nitrils, amides, heterogenic cyclic compounds. The treatment is strictly scientific. When such subjects as ethylene and cyclopropane are discussed, no mention is made of their uses in anesthesia. Quinine, he states, has been used as a febrifuge since the seventeenth century, the historical fact apparently, and not the practical use, being the more interesting. The book is written with a clearness to which the French language lends itself, but even as a French work the clearness of expression is notable. It is an excellent textbook and is an honor to the memory of a man who needs no added eulogy.

Report on Progress of the Works Program December 1937. Harry L. Hopkins, Administrator, Corrington Gill, Assistant Administrator, and Emerson Ross, Director, Division of Research, Statistics and Records. Paper. Pp. 112, with illustrations. Washington, D. C.: Works Progress Administration, 1938.

Nearly \$9,000,000,000 had been distributed up to Oct. 31, 1937, which at the maximum gave relief in the form of work to more than 3,000,000 persons. Projects, which were approved in all cases by local authorities, include highways, public buildings, parks, conservation, airports and a wide variety of "white collar" and educational activities. Special mention is made of the Carrie Tingley Hospital for Crippled Children at Hot Springs, N. M., the Milwaukee Sewing Project, which during the six months from April through September 1937 produced more than 840,000 garments, and various public works. A sample of 1,595,000 workers in August 1937 showed that 64 per cent of them were unskilled and only 5 per cent professional and technical workers. The National Youth Administration, by the expenditure of \$122,233,050 in 1936 and 1937 aided 400,000 youths each year in obtaining an education. Various research projects, especially some in regard to the effects of technologic development, were conducted.

Chiropody: Theory and Practice. By Franklin Charlesworth, F.B.A.Ch., Founder of the British Association of Chiropodists. Foreword by W. Sayle Creer, M.Ch., F.R.C.S. Second edition. Cloth. Price, 15s. Pp. 205, with 57 illustrations. London: Actinic Press, Ltd., 1938.

The first part of the book is a review of the anatomic structures of interest to the chiropodist. The author warns the chiropodist that many of the conditions which the latter is called on to treat can be successfully handled only by a qualified surgeon. The writer of the foreword to the first edition calls attention to the fact that modern fashions in footwear and over-indulgence or carelessness in the pursuit of various sports have increased the frequency of foot complaints. There is today a large number of persons who are attempting, with and without training or qualification, to deal with them. The manuscript has been reviewed, read and corrected by an orthopedic surgeon. Chapters on the anatomy and physiology of the foot and lower part of the leg are given in some detail in order to lay the groundwork for the second part of the book. The author discusses osteology, connective tissues, ligaments of the knee, ankle and foot, muscles of the leg and foot and arteries and veins of the leg and foot, and the nervous system. Some of

the conditions mentioned are taken care of by little more than a definition, which is just about all the space they deserve in this type of book. The information appears to be accurate, much of it having been taken from other sources of anatomy and physiology. The chapter on foot orthopedics is satisfactory. The chapter on pads and domes and strappings is good. The chapter on ringworm of the foot is weak. If the author had used the space occupied by the respiratory condition for elaboration of the treatment of ringworm—which is so common and important—it would have enhanced the value of the book. The case notes from the foot hospital are commendable.

Introduction and Guide to the Study of Histology for Students in Medical Schools and Colleges. By Avery E. Lambert, Ph.D., Professor of Histology in the School of Medicine, State University of Iowa. Cloth. Price, \$5. Pp. 542, with 185 illustrations. Philadelphia: P. Blakiston's Son & Co., Inc., 1938.

The descriptive matter of this book is written from the point of view of the older textbooks and is based on the data they contain. Most of the illustrations are the well known semidiagrammatic figures of Stöhr, to which a few original photomicrographs and some illustrations from recent textbooks have been added. The work is prefaced with a simple description of the compound microscope and directions for its use. The text is interlarded with detailed directions for the study and drawing of the prepared sections furnished. The author does not regard the study of fresh tissue as practicable for beginners. There is an appended list of titles for the student who may have been inspired to seek further information.

Grundlagen der allgemeinen und speziellen Arzneiverordnung. Von Paul Trendelenburg. Herausgegeben von Otto Krayer, Professor der Pharmakologie an der Amerikanischen Universität Beirut (Libanon). Fourth edition. Paper. Price, 16.20 marks. Pp. 322. Berlin: F. C. W. Vogel, 1938.

The first part of this book (twenty-eight pages) deals briefly with the general technic of medication, the remainder (almost 300 pages) with the special technics. In the second part are discussed with practical detail and under a therapeutic classification the technic of prescribing and administering the important medicinal substances. The author intentionally avoids all theory as well as all discussion of the nature and mode of action of the various bodies under discussion. He describes, on the other hand, in practical detail the nature of the remedies and their indications, untoward effects and dangers, as well as methods of giving them, including numerous illustrative prescriptions. In a book dealing so extensively with the administration of medicines, it is to be regretted that so little attention is paid to elegant or palatable medication.

Néphropathies et néphrites. Leçons cliniques (1934-1936). Par F. Rathery, professeur de clinique thérapeutique médicale à la Faculté de médecine de Paris. [2^{me} série.] Paper. Price, 60 francs. Pp. 356, with 30 illustrations. Paris: Librairie J. B. Baillière et fils, 1937.

This volume is a second series of clinical lectures embracing material similar to that in the former volume by the same author. The cases presented are all interesting and for the most part unusual or frankly rare. The prolixity and repetition inherent in the presentation of clinical lectures perhaps unnecessarily lengthens some of the chapters. Nevertheless the accounts of the cases are enlivened by the engaging language of Professor Rathery. The lectures open with a discussion of classification of nephritis and the author offers what he is pleased to term a "functional" classification, wherein kidney lesions are divided into nephropathies and nephritides, the former group showing evidence clinically or pathologically of renal alteration without accompanying functional impairment while the latter group embraces renal lesions which show functional changes with or without superimposed evidences of the play of bodily compensatory mechanisms. The classification is novel but, like all others, is too circumscribed and leaves much to be desired. Case studies include purpuric nephritis, chronic azotemic and hypochloremic nephritis secondary to a unilateral renal lesion, renal acidosis, renal forms of endocarditis lenta, various types of "nephrosis," lead and mercurial nephritis, hepatonephritis, gouty kidney, nephritis secondary to lithiasis and finally renal dwarfism. The cases presented were for the most part well studied and a great many were proved at the necropsy table or from biopsy specimens procured during

the course of surgical procedures. The author's discussion is interesting and in general accord with modern theory. Nevertheless, several of the conclusions which the author sets forth are difficult to rationalize with the stated facts in the particular case, while many of his conclusions are frankly confusing. In general the volume has reading interest for the specialist in the field of renal disease, although some of the case reviews are of such a nature as to attract internists directing their attention to metabolic or hepatic diseases.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Workmen's Compensation Acts: Rupture of Aneurysm Resulting from Strain.—Evans had not performed any manual work for four months. He was employed by the defendant to repair road scrapers, tightening bolts and boring holes with a five-eighths inch bit through 4 inch timbers. After working for twenty minutes, Evans complained of a severe pain in his abdomen and sought water and sodium bicarbonate, which he obtained at a farm house about 75 yards away. At that time he was not vomiting but "looked kind of pale as if he were in great pain," and had beads of sweat on his face. He collapsed and died within ten minutes. The physician who was called believed at first that death was due to either acute gastritis or heart trouble. An undertaker, however, in the course of embalming the body, inserted a trocar into the abdominal cavity and withdrew a quart and a half or more of blood. The physician who had been called did not learn of this until after the body had been buried, and then he concluded that death resulted from a ruptured aneurysm of the aorta, of a mesenteric artery, of the hepatic artery, or of a renal artery.

Evans' widow brought proceedings under the Idaho workmen's compensation act. The physician who had viewed the body gave his opinion as to the cause of death as stated above. Another physician, called on behalf of the widow, in response to a hypothetical question in which was given the substance of the testimony showing the symptoms presented by the deceased workman, the nature of his work immediately prior to death and the finding of blood in the abdomen, testified that Evans died of a ruptured aneurysm in the upper abdominal cavity, the rupture being due to "the increase in blood pressure due to exertion of working with the brace and bit." Another physician, however, called on behalf of the employer and his insurance carrier, testified that he had heard the testimony of the witnesses and that in his opinion the most probable cause of Evans' death was coronary disease. The cross examination of this witness indicated that in forming his opinion he did not accept the statement of the undertaker as true; he apparently did not believe the undertaker would know blood if he saw it, nor that he knew from what cavity or cavities in the body he drew it. The industrial accident board held that Evans' death was due to disease and was not the result of any injury arising out of and in the course of his employment. The district court, Oneida County, reversed the order of the industrial accident board denying compensation, and the employer and his insurance carrier appealed to the Supreme Court of Idaho.

There is no conflict, said the Supreme Court of Idaho, in the evidence in this case other than in the testimony of medical experts. The testimony of an expert as to his opinion is not evidence of a fact in dispute. It is advisory only, to assist the triers of fact to understand and apply the testimony of other witnesses. Its value depends on, among other things, the expert's confining his testimony to the facts incorporated in the question propounded to him and, if he does not assume those facts to be true and base his answer on them, his testimony is worthless and should be rejected. It is for the triers of fact to determine whether the evidence on which the expert

bases his opinion is true or not. It is not for the expert to determine the truth or falsity—the reliability or unreliability—of the testimony of other witnesses. For that reason he should not be asked to base his opinion on the testimony of other witnesses which he has heard, but the facts which that testimony tends to establish and which is relied on by the party propounding the question should be hypothetically stated. The testimony of the expert should be responsive to that hypothetical question and it is his duty to assume facts embraced in the hypothetical question to be true.

The court accordingly concluded that the testimony of the physician called by the employer that the most probable cause of Evans' death was a coronary disease and that he did not hear any evidence presented in the case that would indicate to him that death resulted from a ruptured aneurysm was not entitled to be given weight and should be rejected. That testimony being eliminated, continued the Supreme Court, the remaining evidence was amply sufficient to establish that Evans died from a ruptured aneurysm due to increased blood pressure caused by the exertion required by the performance of the duties of his employment and his widow was entitled to compensation.—*Evans v. Cavanagh (Idaho)*, 73 P. (2d) 83.

Taxes: Credit Association Composed in Part of Physicians Not Exempt from Taxation.—The Retailers Credit Association, a corporation organized under the laws of California, included in its membership physicians, dentists and other professional men. Among its various activities, it furnished reports on the credit rating of individuals to members, for which service a fee was charged. It also acted as a collection agency for members, receiving a commission for so doing. Its activities normally resulted in a profit and, while the by-laws provided for the payment of dividends to members under certain circumstances, no such payment had ever been made.

For the year 1931 the corporation had a net profit of \$6,000. It claimed exemption from the payment of federal income taxes for that year on the ground that it was a business league within the meaning of the Revenue Act of 1928, which exempted "business leagues . . . not organized for profit and no part of the net earnings of which inures to the benefit of any private shareholder or individual." A denial of the claim for exemption was affirmed by the board of tax appeals (33 B. T. A. 1166), and the corporation appealed to the circuit court of appeals, ninth circuit.

Under the federal income tax regulations, said the court, a business league to be exempt must not engage in a regular business of a kind ordinarily carried on for profit. While the court thought that the Retailers Credit Association was a "business league" within the meaning of the income tax law, it seemed clear that one of its purposes was to engage in a regular business of a kind ordinarily carried on for profit, namely, the credit reporting aspect of its service and its collection activities, and that these activities were not incidental to the main purposes of the corporation but were primary purposes. The court therefore affirmed the ruling of the board of tax appeals denying exemption to the corporation.—*Retailers Credit Assn. of Alameda County v. Commissioner of Internal Revenue*, 90 F. (2d) 47.

Society Proceedings

COMING MEETINGS

- American Urological Association, Quebec, Canada, June 27-30. Dr. Clyde L. Deming, 789 Howard Ave., New Haven, Conn., Secretary.
- Maine Medical Association, Bar Harbor, June 26-28. Dr. F. R. Carter, 22 Arsenal St., Portland, Secretary.
- Medical Library Association, Boston, June 28-30. Miss Janet Doe, 2 East 103d St., New York, Secretary.
- Minnesota State Medical Association, Duluth, June 29-July 1. Dr. E. A. Meyering, 11 West Summit Ave., St. Paul, Secretary.
- National Medical Association, Hampton, Va., Aug. 15-19. Dr. John T. Givens, 1198 Church St., Norfolk, Va., General Secretary.
- West Virginia State Medical Association, White Sulphur Springs, July 11-13. Mr. Joe W. Savage, Public Library Building, Charleston, Executive Secretary.
- Wyoming State Medical Society, Laramie, Aug. 7-9. Dr. M. C. Keith, 156 South Center St., Casper, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers in continental United States and Canada for a period of three days. Periodicals are available from 1927 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them. Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

62: 427-522 (May) 1938

- Growth, Desquamation and Involution of Vaginal Epithelium of Fetuses and Children, with Consideration of Related Hormone Factors. L. Fraenkel and G. N. Papanicolaou, New York.—p. 427.
- Quantitative Study of Lymphoid Organs of Albino Rat. J. E. Kindred, Charlottesville, Va.—p. 453.
- Microscopic Changes in Hypophysis of Albino Rat Following Exposure to Cold, and Their Relationship to Physiology of Secretion. R. N. Baillif, New Orleans.—p. 475.
- Study of White Blood Cells of the Normal Guinea Pig. A. L. Joyner, New York.—p. 497.
- Number and Size of Mammalian Glomeruli as Related to Kidney and to Body Weight, with Methods for Their Enumeration and Measurement. D. A. Ryland, San Francisco.—p. 507.

American J. Digestive Diseases, Huntington, Ind.

5: 153-216 (May) 1938

- Amebic Dysentery in North Carolina. J. M. Ruffin, Durham, N. C.—p. 153.
- Proctologic Aspects of Diarrhea. G. W. Ault, Washington, D. C.—p. 155.
- Importance of Recognizing Contracted Anus. L. A. Buie and W. L. Butsch, Rochester, Minn.—p. 162.
- Effect of Aluminum Hydroxide Cream on Absorption from Gastrointestinal Tract. J. M. Beazell, C. R. Schmidt and A. C. Ivy, Chicago.—p. 164.
- History of Development of Stomach Tube with Some Notes on Duodenal Tube. J. Friedenwald and S. Morrison, Baltimore.—p. 165.
- Therapeutic Application of Acidophilus Milk in Constipation of Children. L. F. Rettger, L. Weinstein, M. Bogin and J. E. Weiss, New Haven, Conn.—p. 170.
- Benign Ulcer of Gallbladder. A. C. van Ravenswaay, Boonville, Mo.—p. 173.
- Peptic Esophagitis: Case. Frances R. Vanzant, L. Daily and J. R. Phillips, Houston, Texas.—p. 175.
- Preplacing Bacillus Coli by Bacillus Paratyphosus B in Large Intestines in Guinea Pigs. Dorothy K. O'Connor, L. Arnold and H. E. McDaniels, Chicago.—p. 176.
- *Nutritional Value of Soybeans. A. A. Horvath, Newark, Del.—p. 177.
- Blood Diastase in Hepatic and Biliary Disease. M. Rachmilewitz, Jerusalem, Palestine.—p. 184.
- Quantitative Studies on Case of Migraine. R. Fainer, Haifa, Palestine.—p. 189.

Nutritional Value of Soybeans.—Horvath reviews the work done on the nutritive value of soybeans, enumerates the mineral constituents and their disease-protective properties and points out the relative low cost of soybean products. As an economic source of valuable and wholesome dietary elements the soybean probably has no peer. The presence of phosphatides in soybeans may have some special physiologic value because phospholipoids are constituents of all the body cells, the nervous tissue being particularly rich in phosphatides. In 1936 a protective factor against nutritional encephalomalacia of chicks was discovered in the nonsaponifiable fraction of certain edible oils, which are headed by soybean oil. It has been found by Miller and Robbins that, compared with most vegetables, soybeans have unusually large amounts of protein, fat, calcium, phosphorus and iron. Cooked immature soybeans proved to be a good source of vitamins A, B and G and a poor source of vitamin C. Besides bread and bakery products the other main outlets for soya flour are for the manufacture of crackers, pancake flour, cocoa-malt mixes, baby foods, chocolate, puddings, ice cream powders, macaroni products and sausages. The addition of soya flour renders these products more nutritious and palatable. The Food Research Division of the United States Department of Agriculture has stated that the most expensive food constituents are minerals, vitamins, proteins and fats. Soybean flour is rich in all these food constituents and yet

relatively cheap. The moderate cost of soybean flour makes it possible for people of small incomes to obtain the maximum of these essential nutritional constituents required by the body, which in the form of other foods might be beyond their reach.

American Journal of Surgery, New York

40: 321-502 (May) 1938

- Renal Rickets or Renal Dwarfism. T. L. Howard, Denver.—p. 323.
- Difficulties in Urethral Catheterization. J. L. Emmett, Rochester, Minn.—p. 349.
- *Traumatic Lesions of Kidney. J. T. Priestley and F. Pilcher Jr., Rochester, Minn.—p. 357.
- Measurement of Kidney Function Before, During and After Pregnancy. A. W. Holman, Portland, Ore.—p. 365.
- Transperitoneal Exclusion Cesarean Section Through Lower Uterine Segment. I. F. Frost, New York.—p. 370.
- Intravenous Anesthesia in Obstetrics: Comparative Study of Pentothal and Evipal Soluble with Report of 250 Cases. F. A. Kassebohm and M. J. Schreiber, New York.—p. 377.
- Surgical Treatment of Syringomyelia. L. J. Adelstein, Los Angeles.—p. 384.
- Common Duct Obstruction. W. S. Sargent, San Diego, Calif.—p. 396.
- High Ligation of Cystic Vessels in Subserous Cholecystectomy: Use of Silver Clips. L. R. Whitaker, Portsmouth, N. H.—p. 407.
- Enterogenous Cysts. B. Sherwin, New York.—p. 413.
- *Carbuncle. J. K. Berman, Indianapolis.—p. 419.
- Physiologic Basis for Ligation of Great Saphenous Vein in Treatment of Varicose Veins. J. R. Veal and B. D. Van Werden, New Orleans.—p. 426.
- Rationale of Surgical Technic in Carcinoma of Rectum and Sigmoid. J. M. Lynch and G. J. Hamilton, New York.—p. 432.
- Electrosurgery in Proctology. R. V. Gorsch, New York.—p. 436.
- Low Back Pain. A. J. Buka, Pittsburgh.—p. 444.
- Fractures of the Hip Joint. F. Mogavero, Philadelphia.—p. 447.
- Femoral Herniorrhaphy. S. J. Burrows, Chicago.—p. 451.

Traumatic Lesions of Kidney.—From 1910 to 1933 Priestley and Pilcher encountered forty-five cases in which they made the diagnosis of rupture of the kidney by external trauma without penetration of the skin. Twenty-four of the patients were seen immediately or within one week following injury, eleven were first seen from one week to one month after the initial injury and the remaining ten patients were first seen from one month to several years or more after injury. The type of renal injury varied from slight subcapsular hemorrhage to complete pulpefaction of the kidney. In some cases the ureter or renal pedicle was completely avulsed. Hemorrhage, usually perirenal but occasionally intraperitoneal, was uniformly present and hematuria, either gross or microscopic, occurred in 95 per cent of the cases. Leakage of the urine around the kidney was common. Serious associated injuries elsewhere in the body were present in 13.3 per cent of cases. Healing may occur satisfactorily with medical treatment, or on the other hand urinary fistulas, hydronephrosis, pseudohydronephrosis, pyelonephritis or anatomic abnormalities of varying degrees may persist or develop. A history of trauma and hemorrhage and pain are cardinal points in the diagnosis, but they should also be substantiated by intravenous urography. In general, medical treatment immediately following the injury is preferred unless contraindicated. Subsequent operation may become necessary in some cases. The two deaths that occurred in the series were attributed to severe extrarenal trauma. Thirty-one patients were followed for a period of from four to twenty-six years subsequent to injury. Eleven patients who underwent nephrectomy are entirely free of symptoms; 73.7 per cent of those treated medically are entirely well and the remainder of the group have mild symptoms referable to the urinary tract.

Carbuncle.—Berman believes that a study of the microscopic anatomy of the skin on the back of the neck and on the face clearly explains the behavior of carbuncle and definitely establishes carbuncle of the face as a distinct entity. He studied 125 cases of severe carbuncle, eighty-three in men and forty-two in women. The majority occurred on the back of the neck in both men and women, but carbuncle occurred twice as commonly on the face of women, whereas it was more common on the scalp of men. The face is a dangerous place, for four of the nine deaths occurred in facial carbuncle. Most carbuncles occurred in patients without debilitating disease; this was more noticeable in women than in men. Obviously the "picking" of cutaneous infections is an important causative factor. Of all associated diseases, diabetes is most frequent.

Carbuncle of the face should be treated conservatively. The general mortality in facial carbuncle was 40 per cent. Carbuncle elsewhere on the body, associated with severe debilitating disease, must also be treated conservatively. Five of the nine deaths occurred in this group. The general mortality was 18 per cent. Carbuncle not on the face and not associated with severe disease should be treated by surgical intervention. This may be by excision or incision. The general mortality in this group was 1 per cent.

Journal of Biological Chemistry, Baltimore

123: 375-612 (April) 1938. Partial Index

- Buffer Action of Unidentified Urine Constituents. A. C. Kuyper, Columbus, Ohio.—p. 409.
Surface Denaturation of Egg Albumin. H. Wu and C.-F. Wang, Peiping, China.—p. 439.
Carbohydrate Metabolism of Brain: VI. Isolation of Glycogen. S. E. Kerr, Beirut, Lebanon.—p. 443.
Hydrogen Ion Concentration Stability of Papilloma Virus Protein. J. W. Beard and R. W. G. Wyckoff, Princeton, N. J.—p. 461.
Biologic Assay of Carbohydrate Metabolism Hormone of Anterior Pituitary. A. J. Bergman and C. W. Turner, with technical assistance of P. T. Cuppes, Columbia, Mo.—p. 471.
Differential Migration of Pressor and Oxytocic Hormones in Electrophoretic Studies of Untreated Press-Juice of Posterior Lobe of Pituitary Gland. G. W. Irving Jr. and V. du Vigneaud, Washington, D. C.—p. 485.
Interaction of Vitamin B₁ in Enzymic Reactions. H. Tauber, Florence, S. C.—p. 499.
Intermediate Forms of Oxidation-Reduction of Flavins. L. Michaelis and G. Schwarzenbach, New York.—p. 527.
Properties of Hemoglobin and Pepsin in Solutions of Urea and Other Amides. J. Steinhart, Boston.—p. 543.
Radioactive Phosphorus as an Indicator of Phospholipid Metabolism: II. Role of Stomach, Small Intestine and Large Intestine in Phospholipid Metabolism in Presence and Absence of Ingested Fat. B. A. Fries, S. Ruben, I. Perlman and I. L. Chaikoff, Berkeley, Calif.—p. 587.

Journal of Comparative Neurology, Philadelphia

68: 297-404 (April) 1938

- Efferent Connections of Flocculonodular Lobe in Macaca Mulatta. R. S. Dow, New Haven, Conn.—p. 297.
Relations of Fascia Dentata, Hippocampus and Neocortex and the Nature of the Subiculum. A. A. Abbie, Sydney, Australia.—p. 307.
Study of Nissl Pattern in Motor Cells of the Hindbrain of Lizard (*Takydromus Septentrionalis*) Under Various Conditions. Wei Chen Chow, Nanking, China.—p. 335.
Studies on Developing Behavior of Anura. K. A. Youngstrom, Lawrence-Kansas City, Kan.—p. 351.
Prenatal Growth of Cat: VII. Growth of the Brain and of Its Parts, of the Spinal Cord and of the Eyeballs. H. B. Latimer, Lawrence-Kansas City, Kan.—p. 381.
The Weights of the Brain and of Its Parts, of the Spinal Cord and of the Eyeballs in the Adult Cat. H. B. Latimer, Lawrence-Kansas City, Kan.—p. 395.

Journal of Nervous and Mental Disease, New York

87: 545-676 (May) 1938

- Is There a Relative Increase in Mental Disease? B. Malzberg, Albany, N. Y.—p. 545.
Blood Pressure and Pulse Rate in Prison Psychosis. R. Schwarz, Danne-mora, N. Y.—p. 556.
*Insulin in Treatment of Acute Mania. L. C. Grosh Jr., Ypsilanti, Mich.—p. 559.
*Effect of Induced Metrazol Convulsions on Schizophrenic Patients. H. H. Reese, Madison, Wis.; A. H. Vander Veer, Chicago, and A. H. Wedge, Mendota, Wis.—p. 570.
Psychologic Effect of Benzedrine Sulfate. P. Schilder, New York.—p. 584.
Correlations of Athetosis, Catatonia and Hypoglycemia. K. Gyárfás, Budapest, Hungary.—p. 588.
Electroencephalography in Diagnosis and Localization of Intracranial Conditions. T. J. Case, Chicago.—p. 593.

Insulin in Treatment of Acute Mania.—Grosh states that recently at the Ypsilanti State Hospital three cases have been observed of apparent diabetes mellitus occurring during the course of the manic phase of manic-depressive psychoses. Two of the cases referred to were studied not only during the periods of acute elation but also during lucid intervals of more normal activity. The study of the dextrose tolerance curves taken during these two periods demonstrates that, while in neither period are they consistently grossly abnormal, still there is a distinct prolongation of the blood sugar elevation during the elated period when compared to the curves obtained under normal conditions, which are suggestive of increased tolerance. This comparison suggested that there was some relative loss of tolerance during the attack for which insulin might be used in

a remedial role. In both of these cases it might possibly have been mere coincidence that the psychomotor activity was sharply cut down to the normal level after a few days of insulin therapy. None the less this type of therapy is suggested as a reasonable procedure in the acute elations in which the dextrose tolerance test reveals a relatively high type of curve when compared with the curve in normal activity.

Metrazol Convulsions in Schizophrenia.—Reese and his co-workers have been using metrazol since February 1937 in the treatment of forty-one cases of schizophrenia. Twenty patients have finished their treatment, while twenty-one others are still under treatment. A 10 per cent aqueous solution prepared from the solid drug, placed in 50 cc. rubber-capped vials and sterilized in an open sterilizer at 100 C. for thirty minutes, is employed. Of the twenty patients in whom metrazol treatment has been completed, four have been discharged in full remission, six are improved and ten have not been benefited. In observing these patients the authors have always kept in mind a comparison with insulin shock therapy. The two forms of therapy differ in many ways, despite their common goal of rendering the patient unconscious. With metrazol, if improvement is to occur, it generally appears quickly and proceeds in spurts; with insulin, improvement is slow and steady. Patients treated with insulin always exhibit their first lucid intervals in immediate relation to hypoglycemia, while those given metrazol do not show improvement until the first or second day after treatment. Stuporous catatonic patients do not respond well to insulin; however, they furnish the most suitable subjects for metrazol therapy. Patients in whom symptoms are of more than a year's duration show little or no improvement when treated with insulin; the status of such patients when they are given metrazol, however, may change considerably for the better, even though full recovery does not take place. A judicious combination of the two methods often seems to produce the best results.

Kentucky Medical Journal, Bowling Green

36: 167-208 (May) 1938

- Public Health the Basic Factor of Social Security. A. T. McCormack, Louisville.—p. 171.
Influenza. W. Dean, Louisville.—p. 178.
*The Management of Acute Diarrheas of Infancy. M. C. Spradlin, Somerset.—p. 181.
Pelvic Infections. I. J. Hoover, Owensboro.—p. 185.
Some Practical Considerations in Diagnosis and Treatment of Syphilis. A. B. Loveman, Louisville.—p. 189.
Nephritis in Childhood. J. W. Bruce, Louisville.—p. 196.
Urolithiasis. E. D. Smith, Owensboro.—p. 199.
Better Obstetrics and Less Gynecology. E. C. Wilhite, Covington.—p. 202.

Acute Diarrheas of Infancy.—Spradlin states that the prophylaxis of diarrhea resolves itself into the following measures: (1) prevention of the infant from becoming overheated, (2) pure, uncontaminated water, (3) intelligent conservative diet, (4) cautious, gradual introduction of new foods to the infant, (5) adequate refrigeration of the baby's food, (6) screening to prevent bacterial contamination by flies and (7) prevention of parenteral infection by avoiding colds and their prompt treatment when they occur. When an acute diarrhea does occur the child should be kept at absolute rest. If necessary, adequate rest should be secured by the use of sedatives. In early, relatively nontoxic cases, adequate fluids (maximum 15 cc. per pound of body weight) may be given by mouth. In the more severe cases the use of one or more transfusions, at intervals of from twenty-four to forty-eight hours, with cross-matched citrated blood is a life saving measure. When parenteral infections are found, the clearing up of these infections is essential to the cure of the diarrhea. Proper dietary management is secondary only to the maintenance of a satisfactory water balance and elimination of any parenteral infection. All patients should have a preliminary starvation period during which only fluids are given. This period may vary from eight to forty-eight hours or even longer, depending on the severity and duration of the case. At the end of this period, in all types but the putrefactive diarrheas, breast milk or the basic milk mixture, if of sound composition, may be resumed in markedly reduced quantities. As the diarrhea gets under control, the amount of the milk mixture may be increased gradually up to the normal requirement. In the proteolytic or ferment-

tative diarrheas the most rational treatment is the administration of an 8 per cent preparation of maltose and dextrin or corn syrup solution after the initial starvation period. This is followed after twenty-four hours by the use of thin cereal gruels for several days before dilute milk mixtures are resumed. The raw apple diet and methods based on it hold great promise of supplanting the older, more conventional methods of treating diarrhea. Saline or sodium bicarbonate colonic irrigations are of particular value when the fever is high or when there is much cramping. These may be followed by a thin starch solution as a retention enema. The following drugs merit consideration: purgatives, opium, bismuth, sedatives, stimulants, atropine, calcium gluconate, alkalis and specific drugs such as emetine, carbarsone, vioform or other antiamebic drugs.

Medical Annals of District of Columbia, Washington

7: 107-136 (April) 1938

- Some Erroneous Concepts Encountered in the Practice of Gastroenterology. J. L. Kantor, New York.—p. 107.
Surgical Treatment of Peptic Ulcer. C. S. White, Washington.—p. 114.
Clinical Observations on Rectal Digitalis Therapy in Congestive Heart Failure. J. S. Diasio, New York.—p. 118.
Nutritional Standards for Normal Growth. J. M. Moser, Washington.—p. 121.
Management of Vesical Paralysis. N. Belt, Washington.—p. 125.

Missouri State Medical Assn. Journal, St. Louis

35: 159-196 (May) 1938

- Diagnosis and Treatment of Hypertrophic Arthritis. J. A. Key, H. J. Rosenfeld and O. E. Tjoflat, St. Louis.—p. 159.
*Newer Treatment of Arthritis and Similar Conditions. J. J. Bredall, Perryville.—p. 164.
Insulin Shock Therapy: Its Importance in General Practice. G. W. Robinson Jr., Kansas City.—p. 168.
Rickets and Osteomalacia. I. B. Horowitz, St. Louis.—p. 169.
Acute Hemolytic Anemia Following Treatment with Sulfanilamide. A. M. Ginsberg and J. B. Brams, Kansas City.—p. 174.
Sulfanilamide in Treatment of Puerperal Septicemia. E. G. Cope, Hornersville.—p. 174.
Public Health: The Truth. J. F. Chandler, Oregon.—p. 175.
Unusual Case of Fistula in Ano. J. S. Poe, St. Louis.—p. 178.

Iontophoresis in Arthritis.—Bredall describes the treatment of arthritis by iontophoresis or ionization with the simple galvanic machine using acetyl-beta-methylcholine chloride. A 0.1 per cent or a 1:1,000 solution of the drug is introduced into the affected part from the positive electrode. Absorbent paper, sheet wadding, reinforced asbestos fabric paper or cotton filled bandage is saturated with the solution and wrapped round the part to be treated. On top of this a tin lead plate or strip is wrapped around the part and connected with the positive pole of the galvanic machine. A large regular moist pad electrode is placed under the back or over the abdomen and connected with the negative pole. The current is gradually increased to from 20 to 30 milliamperes and maintained for from twenty to thirty minutes. Then the current is slowly turned off, the electrodes are removed, and the parts are dried and wrapped. There may be a slight tingling sensation under the electrodes during the treatment but the strength of the current must always be within comfortable toleration of the patient. Iontophoresis is contraindicated in septic conditions and in bronchial and other types of asthma, and it must be used with caution in patients with a cardiac involvement. There was definite improvement in sixteen of twenty patients. Most of these patients have previously had a long trial of treatment with conventional methods without results. Many patients showed not only definite elimination of swelling and deformity but also improvement in strength and function.

New England Journal of Medicine, Boston

218: 711-748 (April 28) 1938

- Studies on Familial Aspects of Cancer. H. L. Lombard, Boston.—p. 711.
*Peritoneoscopy. E. B. Benedict, Boston.—p. 713.
Condition of Cervix as Determined by Vaginal Examination: True Index of End of Pregnancy. R. S. Titus, Boston.—p. 720.
Gout: Report of Unusual Case in a Woman. J. A. Halsted, Dedham, Mass.—p. 723.

Peritoneoscopy.—Benedict has made forty-eight examinations with the Ruddock peritoneoscope. There has been one fatality, in which pneumoperitoneum may well be considered as a contributory cause of death. The patient was in the terminal stages of multiple lung abscess, coronary disease and

possible echinococcic cyst of the liver. An error in judgment was made in subjecting him to the stress and strain of sedative drugs and peritoneoscopy. There have been no other complications except a subcutaneous emphysema in a few cases. No real errors in diagnosis have occurred. When patients are carefully selected, peritoneoscopy is attended with little risk. Those with serious pulmonary or cardiac disease are not good prospects. Abdominal adhesions may complicate the procedure, but by careful selection of the site of puncture difficulties have thus far been avoided. Peritoneoscopy may be indicated in any abdominal or pelvic condition in which the diagnosis is obscure or in which additional evidence is needed to confirm a diagnosis or to plan treatment. The procedure will frequently give information that will decide for or against laparotomy. Peritoneoscopy is useful in cancer, cirrhosis, tuberculous peritonitis, ascites, pelvic tumors, ectopic pregnancy and ovarian dysfunction. In one case an excellent view was obtained of a polycystic liver, in another case of supposed echinococcic cyst the liver was found to be normal, and in a third case in which there was a questionable palpable mass the peritoneal cavity was found to be normal. Serious cardiac or pulmonary disease may be a contraindication, for the peritoneal distention necessary for a satisfactory examination may somewhat embarrass the circulation and the diaphragmatic movements. Because of the danger of spreading infection, peritoneoscopy is contraindicated in inflammatory conditions. Peritoneoscopy will not replace exploratory laparotomy in all cases, but in certain cases it makes it possible to avoid major surgical operations. Peritoneoscopy requires local anesthesia, a stab incision and hospitalization of one day.

New Orleans Medical and Surgical Journal

90: 639-696 (May) 1938

- Factors Influencing the Development of Tuberculosis. F. H. Heise, Trudeau, N. Y.—p. 639.
Undulant Fever with Endocarditis and Mycotic Aneurysm: Case Report. J. E. Knighton Jr., Shreveport, La.—p. 646.
Report of the Pasteur Institute of Charity Hospital of Louisiana at New Orleans for the Year 1937. R. D'Aunoy and J. H. Connell, New Orleans.—p. 648.
History of Cesarean Section. J. W. Reddoch, New Orleans.—p. 650.
Anatomic Consideration of Dystocia. H. Cummins, New Orleans.—p. 652.
Indications for Cesarean Section. W. E. Levy, New Orleans.—p. 652.
Contraindications for Cesarean Section. M. L. Stadiem, New Orleans.—p. 654.
Choice of Operation in Cesarean Section. P. Graffagnino, New Orleans.—p. 655.
Adequate Medical Care. E. L. Sanderson, Shreveport, La.—p. 656.
Social Security and Public Welfare: Relation of the Medical Social Worker to the Physician. Beatrice Hodge, New Orleans.—p. 659.
Some Phases of the Social Security Act. Elizabeth Wisner, New Orleans.—p. 662.
The State Hospital and Welfare Boards. O. P. Daly, Lafayette, La.—p. 664.
Federal and State Program for Maternal and Child Health. R. W. Todd, New Orleans.—p. 668.
Relation Between Preventive Medicine and Federal and State Welfare Programs. W. H. Perkins, New Orleans.—p. 670.

Oklahoma State Medical Assn. Journal, McAlester

31: 107-152 (April) 1938

- Congenital Visceral Anomalies as Exemplified by Developing Vascular System. C. F. De Garis, Oklahoma City.—p. 107.
*Chronic Arthritis and Undulant Fever: Their Interrelationship. E. Goldfain, Oklahoma City.—p. 111.
Consideration of the Varied Symptomatology of Prostate and Verumontanum. A. R. Russell, McAlester.—p. 114.
Endocrinology: Its Practical Application in Gynecology. P. N. Charbonnet and E. O. Johnson, Tulsa.—p. 116.
Relative Value of Various Methods of Diphtheria Immunization. C. E. Bradley, Tulsa.—p. 124.
Further Experience with Prostatic Resection. H. S. Browne, Tulsa.—p. 126.

Chronic Arthritis and Undulant Fever.—Goldfain declares that the ambulatory and especially the chronic or subclinical cases of brucellosis in man should be of interest to the physician who would study carefully any case giving a history of rheumatic or arthritic symptoms. The symptoms of subclinical or chronic types of brucellosis (arthralgia, arthritis, headache, backache, malaise, weakness, neuritis or neuralgia, myositis, leukopenia, secondary anemia, spondylitis and persistent joint stiffness), in their entirety or in part, may well lead to a diagnosis of chronic rheumatic disease or chronic arthritis without brucel-

losis ever being suspected unless it is tested for properly. It has been quite definitely proved that the agglutination test may be negative in at least 5 per cent of the cases. Other diagnostic measures therefore must be used to determine its presence. These are the opsonocytaphagic test and the cutaneous test.

Rocky Mountain Medical Journal, Denver

35: 345-424 (May) 1938

- *Parasitic and Infectious Diseases Transmitted Through Meat and Dairy Products. G. H. Koon, San Antonio, Texas.—p. 362.
Differentiation of Various Types of Enterocolitis and Their Management. J. A. Bagen, Rochester, Minn.—p. 370.
Medical Management of Peptic Ulcer. R. H. Finney, Pueblo, Colo.—p. 374.
Surgical Aspects of Peptic Ulcer. G. E. Rice, Pueblo, Colo.—p. 376.
Profuse Hemorrhage in Peptic Ulcer. B. E. Konwaler, Pueblo, Colo.—p. 378.
Value of Papaverine Hydrochloride in Treatment of Postoperative Pulmonary Embolism. D. C. Collins, Los Angeles.—p. 381.
It's a Fact. Mary B. Miller, Pittsburgh.—p. 386.

Diseases from Meat and Dairy Products.—The diseases most frequently caused by contaminated foods are those of the intestinal group. These Koon lists as typhoid and paratyphoid fever, common diarrhea, bacillary dysentery, protozoal dysentery, cholera, helminthic infestations, undulant fever, food infection and food intoxication. Diseases other than those belonging to the intestinal group, such as septic sore throat, diphtheria, scarlet fever or tuberculosis, may be transmitted by food but, except in the case of septic sore throat, food constitutes merely an incidental and not the usual or principal agency of transmission. Flesh of animals suffering from diseases due to the Gärtner group of organisms, such as septicemia and diarrhea, or from puerperal fever or tuberculosis may serve to transmit pathogenic organisms to the consumer. Human infection with animal parasites, introduced through the medium of food, is of special interest because of the number of helminths and protozoa which pass all or part of their lives in the intestine. The only consequential source of trichinosis for man exists in hogs, although a variety of other animals may be infested. Infestation of swine can be controlled by a swine sanitation system. The campaign to educate the public against the use of any raw or partially cooked pork should be better organized and more intensive. There are several tapeworms (beef, swine and fish) which man shares with the lower animals. The most frequent form of food poisoning in man is caused by foods infested with members of the *Salmonella* (paratyphoid enteritidis) group or with other bacteria, especially the staphylococci. Of the foods involved, meat products are only slightly more frequently involved than nonflesh foods (68 per cent). Practicing physicians and those engaged in public health work can contribute largely to the epidemiologic control of disease by interesting themselves in and lending their efforts to securing local or state laws governing food inspection that are comparable to the federal meat inspection act. Such activities should be removed from the influence of local or state politics.

Southwestern Medicine, El Paso, Texas

22: 165-208 (May) 1938

- Medical Progress and Its Significance. H. W. Rice, Bisbee, Ariz.—p. 165.
Treatment of Tuberculosis of Upper Extremity. A. Steindler, Iowa City.—p. 168.
Tumors of the Breast. G. W. Jones, Philadelphia.—p. 172.
Laryngotracheobronchitis. P. H. Holinger and A. H. Andrews Jr., Chicago.—p. 174.
First Aid Mindedness in Treatment of Fractures. C. E. Yount, Prescott, Ariz.—p. 178.
Upper Respiratory Infection from Spirochaeta Bronchialis in Children. R. D. Haire, Hobbs, N. M.—p. 181.
Sinus Thrombosis and Mastoiditis Without Otorrhea. J. H. Childrey, San Francisco.—p. 182.

Wisconsin Medical Journal, Madison

37: 361-444 (May) 1938

- Treatment of Diseases of the Heart. F. A. Willius, Rochester, Minn.—p. 377.
Stabilization of Mandibular Joint by Injection of Sclerosing Solution. R. P. Gingras, Milwaukee.—p. 383.
Treatment of Acute Mastoiditis. J. K. Trumbo, Wausau.—p. 385.
Prophylaxis and Therapy of Eclampsia. J. B. Vedder, Marshfield.—p. 394.
Meningitis Caused by Bacillus Influenzae: Report of Case. H. A. Bachhler, Sack City.—p. 392.
Staphylococcal Conjunctivitis. C. S. O'Brien, Iowa City.—p. 401.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Children's Diseases, London

35: 1-84 (Jan.-March) 1938

- Gaucher's Disease in Children. F. R. B. Atkinson.—p. 1.
Anomalous Forms of Varicella. G. W. Ronaldson and W. H. Kelleher.—p. 22.
Clinical Anatomy of Cases of Epispadias and Extroversion of the Bladder. A. R. Thompson.—p. 36.

Journal of Tropical Medicine and Hygiene, London

41: 125-140 (April 16) 1938

- Third Note on Infectivity to Man of Strain of *Trypanosoma Rhodesiense*: Two Further Passages Through Antelopes and Tests on Volunteers. J. F. Corson.—p. 125.
*Multiple Myeloma with Hyperglobulinemia. G. M. Decherd Jr. and L. Holland.—p. 129.

Multiple Myeloma with Hyperglobulinemia.—Decherd and Holland cite two cases of multiple myeloma which illustrate the highly variable clinical picture that this condition may present. The first patient showed an anemia, hypercalcemia and hyperglobulinemia, with a greatly accelerated sedimentation rate. Bence Jones protein was excreted in large amounts. There were probably extensive pulmonary metastases. The second patient was thought to have chronic arthritis on admission, but the pain in the chest and back was due to skeletal involvement by myeloma. There was nitrogen retention in the blood, without an elevation of blood pressure and a high serum calcium with normal phosphorus. An increase in blood proteins is uncommon and, when found, should lead one to suspect multiple myeloma. Myeloma should be considered in all atypical cases of renal disease showing nitrogen retention without hypertension. Renal involvement is found in approximately 70 per cent of cases, ranging from proteinuria alone to renal insufficiency. Bence Jones protein is found in approximately half of the cases of multiple myeloma, and its presence is strongly suggestive of this disease. However, other conditions may lead to the renal excretion of this protein, notably diseases involving the bone marrow, such as leukemia or metastatic carcinomatosis, or chronic accumulation of pus, as in empyema.

Medical Journal of Australia, Sydney

1: 639-682 (April 9) 1938

- *Bacteriologic and Clinical Study of Professional Personnel of Maternity Hospitals, with Special Reference to Carriers of Hemolytic Streptococci. Lucy M. Bryce and Phyllis Tewsley.—p. 639.
Further Observations on Delayed Testis. A. B. McCutcheon.—p. 654.
Traumatic Rupture of Urethra and Its Treatment. H. Moore.—p. 657.
The Turbulent Dr. Lhotzky. J. MacPherson.—p. 661.

Personnel of Maternity Hospitals.—Bryce and Tewsley discuss an outbreak of three cases of puerperal fever and the measures adopted to deal with it and those designed to prevent future similar outbreaks. In addition to the recognized biochemical and serologic methods of classification of hemolytic streptococci, their sensitivity to four serologically distinct types of streptococcus bacteriophage was tested; it was not found to be in complete agreement with the results of the precipitin test. The variation of sensitivity to bacteriophage among strains falling into Lancefield's group A suggests, however, that this property might be used in epidemiologic studies. The incidence of throat carriers of group A streptococci among the contacts of the three patients with puerperal fever was found to be 22 per cent. On two subsequent occasions, when there had not been recent known contact with streptococcal infections, the incidence of group A streptococci among similar groups of medical practitioners and nurses was respectively 3 and 6.7 per cent. In persons with healthy respiratory tracts the presence of hemolytic streptococci in throat swabs appeared to be closely associated with recent contact with streptococcal illness. In the personnel with clinically detectable abnormality of the nasopharynx there was a greater tendency to harbor hemolytic streptococci irrespective of recent contact. Exclusion from maternity units of persons with such abnormality, by means of preliminary medical examination, would be a possible way of reducing the risk of infection of patients and the disorganization attendant on their withdrawal during a period of obstetric work.

Presse Médicale, Paris

46: 697-712 (April 30) 1938

*Urea Clearance Test (Coefficient of Van Slyke) in Study of Renal Function. Pasteur Vallery-Radot, P. Delafontaine and J.-F. Forge.—p. 697.

Shortening of the Mean Delay Between the Age of Primary Tuberculous Infection and the Age of Pulmonary Tuberculosis as a Disease: Practical Consequences. E. Bernard and J. Weil.—p. 698.

Urea Clearance Test (Van Slyke) and Renal Function.

—Pasteur Vallery-Radot and his collaborators, after calling attention to Ambard's laws on the concentration of urea in the urine and in the blood, review the studies of American authors on the excretion of the urea in the volume of urine, citing Van Slyke's formulas for the maximal clearance and for the standard clearance of urea. The formula for the maximal clearance is applied if the volume of urinary secretion is equal or superior to 2 cc. per minute; that for the standard clearance is employed when the urinary secretion is below 2 cc. per minute. The authors made comparative studies with Ambard's constant and with Van Slyke's formula for urea clearance on sixty-one patients. In forty-six (75 per cent) the tests of Ambard and Van Slyke produced comparable results. Eleven of these forty-six subjects were free from renal disturbances according to the tests, whereas the thirty-five others had manifest renal insufficiency. In fifteen subjects (25 per cent) the tests of Ambard and of Van Slyke gave discordant results. In one case the test of Van Slyke was abnormal, while the constant of Ambard and the other functional tests gave normal results. In fourteen other cases, Van Slyke's test was normal when Ambard's disclosed increased values; in ten of these subjects the other renal tests gave normal results. The authors say that it cannot be concluded from this that one test is more sensitive than the other, for the two tests estimate the urea secretion on a different basis. They think that the urea clearance test of Van Slyke has a place among the other renal tests. It is simple and gives evidence of the renal "flexibility." This functional flexibility of the normal kidney is opposed to the functional rigidity of the diseased kidney. A number of investigators have accepted this idea as fundamental.

46: 729-752 (May 7) 1938

Slow and Continuous Injection of Insulin in Diabetic Patients: Insulin Requirements, Maintenance Dose, Dissociated Action on Glycosuria and Acetonemia. A. Baudouin, J. Lewin and E. Azérad.—p. 729.

Inflammatory Exacerbations in Course of Pulmonary Tuberculosis. R. Benda and H. Mollard.—p. 732.

*Study of Exchange of Vitamin C of Mother and Nursing Infant. W. Neuweiler and J. Hubscher.—p. 734.

Vitamin C in Mother and Nursing.—Neuweiler and Hubscher investigate whether pregnancy and lactation produce changes in the metabolism of ascorbic acid. First they give their attention to the problem as to how the fetal organism obtains the ascorbic acid necessary for its growth. They consider it demonstrated that the fetus receives the vitamin C from the maternal organism, for a synthesis of ascorbic acid in the fetal organism is highly improbable. The great ascorbic acid content of the placenta is a reserve placed by the maternal organism at the disposal of the fetus. Studies revealed that the blood of pregnant women has a much lower vitamin C content than has the blood of nonpregnant women. Tests on the urines of pregnant and lactating women disclosed that the vitamin C deficit is greatest in the nursing mothers. The authors also investigated the vitamin C content of the milk. They studied human milk, cow's milk and goat's milk, these being the only types of milk customarily used for the feeding of infants. They found that human milk contains from five to six times more vitamin C than does cow's or goat's milk. The animal species which are capable of effecting a synthesis of vitamin C have a milk that is poor in vitamin C. The quantity of vitamin C contained in the milk of women suffices for the normal needs of the infant, whereas the milk of cows and goats is insufficient in this respect. Comparative studies on the urinary elimination of vitamin C in nurslings revealed that infants receiving large amounts of vitamin C eliminate much more than those receiving little. It was found also that the quantity required by the nursling is relatively large; it amounts to approximately 6 mg. per kilogram daily. On the basis of their observations, the authors conclude that artificially fed infants must be given added quantities of vitamin C in the form of lemon juice or of a synthetic

vitamin C product. Regarding the nursing mothers, they say that a rational diet furnishes nearly all the vitamin C necessary. One or two oranges a day suffice and more than cover the needs of the nursing mother.

Revue Neurologique, Paris

1: 329-448 (April) 1938

*Serous Meningitis. M. Molhant.—p. 329.

New Anatomoclinical Observation of Sclerosis with Acute Plaques. Riser and Geraud.—p. 348.

Serous Meningitis.—Molhant says that the term serous meningitis was employed first by Quinke to characterize the excessive production of cerebrospinal fluid with accumulation in the cerebrospinal spaces. Before taking up the different forms of serous meningitis, the author discusses the biologic physiology of the cerebrospinal fluid. He emphasizes the importance of the biologic equilibrium of the cerebrospinal fluid on the stimulation of the hypothalamic sympathetic centers and the role of the cerebrospinal fluid in the regulatory mechanisms of the humors. He shows that the clinical aspects of localized serous meningitis, at least in its simple forms, are the manifestation of an organofunctional pathogenic complex. The meningeal cyst is a sequel of a subacute inflammation of the brain and meninges. The treatment of choice is the intradermal tuberculin desensitization. Discussing the generalized cerebral serous meningitis, he takes up first the purely toxic forms, which are caused essentially by the noxious action of certain endogenous toxic substances. Hypertonic solutions of dextrose in massive doses, repeated for several days, have a remarkable curative action in the acute cases. The second type of generalized meningitis discussed by the author is the form that is due to toxic sensitization either by a medicinal or by an infectious factor. The reported histories indicate intoxication with phenobarbital, alcohol, gold salts and so on, the presence of chronic evolutive tuberculous processes or the combination of these medicinal and infectious factors. In these cases the administration of hypertonic solutions of dextrose constitutes the treatment of choice during the acute periods. In the chronic forms repeated lumbar punctures, decompressive craniectomy and other intracerebral interventions have been recommended. Roentgen treatment has also been recommended because under its influence the production of cerebrospinal fluid is decreased. The author utilized with good success intradermal tuberculin desensitization. This treatment is simple, inoffensive and at the disposal of the general practitioner. By its para-allergic action it dynamizes and regulates the apparatus of disturbed biologic regulation of the dyscrasic organism. It has a desensitizing action. By its specific allergic action it contributes also to the cure of the tuberculous lesions.

Schweizerische medizinische Wochenschrift, Basel

68: 443-528 (April 30) 1938. Partial Index

Symptomatology of Gastrocolic Fistula. B. Breitner.—p. 443.

Wire Extension. M. Kirschner.—p. 444.

Ablation of First Lumbar Ganglion in Painful Sequels of Phlebitis of Inferior Member. R. Leriche.—p. 451.

Rare Case of Cerebral Prolapse into Sinus Frontalis. O. Uffreduzzi.—p. 456.

*Return to Billroth I in Secondary Gastric Operations. P. Clairmont.—p. 461.

Abdominoperineal Amputation of Rectum. P. Decker.—p. 463.

Billroth I in Secondary Gastric Operations.—Clairmont points out that it was von Haberer who, by changing and improving the technic of Billroth's first method, made it suitable not only for the primary resection on account of gastric or duodenal ulcer but also for the complicated after-operations on account of disturbances after gastro-enterostomy. The author describes the clinical histories of three patients and demonstrates that the resection according to the first method of Billroth is the best intervention in counteracting the unfavorable results of gastro-enterostomy and in reestablishing physiologic conditions. Clairmont admits that the surgeon who uses Billroth's first method rarely or not at all for gastric resection will hardly find the courage to use this method in the more complicated cases of second or third interventions. However, the three reported cases, as well as other reports in the literature, demonstrate that especially in these complicated cases the first method of Billroth produces excellent results, which are not obtainable with other methods.

Archivio di Ortopedia, Milan

53: 639-896 (Dec. 31) 1937

- Bilateral Bifurcation of Feet and Its Surgical Therapy. R. Marziani.—p. 639.
- Early Treatment of Obstetric Torticollis with Plaster Collar Cast with Shoulder. R. Marziani.—p. 651.
- Personal Technic in Treatment of Fractures of Clavicle and Its Results. R. Marziani.—p. 659.
- Congenital Luxation of Hip Joint and Blood Group. E. Tranquilli-Leali.—p. 681.
- *Etiology of Articular Osteochondroma. S. L. Carnevali.—p. 713.
- Early and Late Congenital Osteogenesis Imperfecta: Analogies and Differentiation. A. Mastromarino.—p. 729.
- Clinical Semeiology of Lameness. P. Antonio.—p. 805.

Etiology of Articular Osteochondroma.—Carnevali made microscopic studies of osteochondromatous nodules which had been removed surgically from the knee of a patient. The patient, aged 40, had had gonorrheal purulent arthritis, which was treated by arthrotomy. Some years later roentgen examination of the knee joint showed intra-articular calcification. On operation a great number of nodules, both loose and adherent to the synovial membrane, were found and removed. On microscopic study the loose nodules were found to be in the final stage of a proliferating process. The cartilage was preserved by osmotic nutrition. The osteogenic process was still in progress in the center of the pedunculated nodules, while the cartilaginous layer was well preserved. The author reviews the literature and discusses the infectious, traumatic and embryologic theories on the pathogenesis of intra-articular osteochondroma. He believes that the disease is due to the presence of intra-articular infection or of acute or chronic inflammation which induces alterations of the physicochemical condition of the synovial membrane with consequent primary hyperplasia and secondary metaplasia. The metaplastic synovial villi develop into the chondromatous nodules, in the center of which processes of calcification and ossification take place as long as the nodules have vascular connections with the synovial membrane (sessile and pedunculated nodules). When the nodules become detached from the synovial membranes, the phenomena of calcification and ossification of the center of the nodules stop. The bone portion of the nodules appears as atrophic old bone, whereas the cartilaginous layer of the nodule shows a living aspect since it continues to receive nutrition by osmosis.

Studium, Naples

28: 97-120 (May 1) 1938

- Treatment of Ancylostomiasis. M. Mazzitelli.—p. 97.
- *Secretory Functions of Stomach in Course of Atropa Belladonna Treatment. E. Nicolini.—p. 99.

Stomach During Treatment with Belladonna.—Nicolini determined the secretion of hydrochloric acid in the stomach in two groups of patients who had postencephalitic parkinsonism and who were being treated with atropa belladonna. In one group of fifteen patients the treatment had been given for a short time in small doses. In the other group of sixteen patients it had been given for a long time in large doses. Determinations of the hydrochloric acid secretion were made by examination of the gastric secretion, which was withdrawn at intervals of fifteen minutes during the first hour after administration of an Ewald meal test. The author found that in the majority of cases the hydrochloric acid secretion is diminished before the treatment is given, in the course of which it diminishes still more. In a few instances achlorhydria appears. There is no fixed therapeutic dose by which lasting inhibition of the hydrochloric acid secretion may be induced, as the effect depends on the individual tolerance and ability of the patient to accustom himself to the drug. Small doses of belladonna may inhibit the hydrochloric acid secretion in some cases, whereas large doses are necessary to inhibit it in others. In some cases in which the secretion is normal before the treatment, it does not change in the course of the treatment, even though paralysis from the vagus develops in other parts outside the gastric territory. In some patients showing hyperchlorhydria before the treatment, the hydrochloric acid secretion becomes normal in the course of the treatment. According to the author the results of his observations show that the secretory functions of the stomach do not depend

entirely on vagal innervation. The latter conception should be kept in mind when the production of lasting changes of the gastric secretion, by means of vagal inhibition, is indicated in the treatment of certain diseases, such as in the treatment of hypersecretory neurosis by atropine.

Hospital, Rio de Janeiro

13: 751-956 (May) 1938. Partial Index

- Tests for Function of Liver and Biliary Tract. J. Vilela Pedras.—p. 783.
- Lobitis of Azygos Lobe: Case. A. L. Stockler.—p. 817.
- Cervicothoracic Sympathectomy in Treatment of Paroxysmal Respiratory Syndromes. M. C. de Mota Maia.—p. 823.
- Thalamencephalic-Hypophyseal Adiposity (Adiposis and Underdevelopment of Genitalia, Frölich's Type). Monteiro de Carvalho.—p. 857.
- Pyloric Spasm: Case. M. Vaz de Melo.—p. 891.
- *Pleural Incontinence. A. Cordeiro Junior and F. Benedetti.—p. 913.

Pleural Incontinence.—Cordeiro Junior and Benedetti report two cases of incontinence of the pleura to pneumothoracic insufflations in patients with pulmonary tuberculosis. The insufflations of 200, 500 and 800 cc. of gas, in three different attempts, failed in each case to induce pneumothorax. There was no technical error. Roentgenoscopy showed no gas collection in the pleura. The roentgenograms showed no collapse of the lungs. According to the author, the cause of the refractivity of the pleura for pneumothorax is the presence of a pleuro-bronchial fistula without any spontaneous pneumothorax. The gas enters by the pleura and is immediately eliminated through the bronchi. Two factors are of importance: the presence of adhesions around the fistula, which prevent the formation of spontaneous pneumothorax (anatomic factor), and the expansion of the lung from stimulation of the vagus nerve (physiologic factor).

Klinische Monatsbl. f. Augenheilkunde, Stuttgart

100: 497-656 (April) 1938. Partial Index

- *Ophthalmologic Studies on Uniovular Twins of Advanced Age: Hereditary Nature of Signs of Aging Process. A. Vogt.—p. 497.
- Blood Pressure and Ocular Tension: Contribution to Pathology of Tabetic Atrophy of Optic Nerve. K. Albrich and F. Kukán.—p. 545.
- Oligodendroglioma as Example of Primary Intracranial Tumors of Optic Nerve. E. Schreck.—p. 560.
- Glioblastic and Spongioblastic Genesis of Retinal Tumors. G. Favaloro.—p. 577.

Ophthalmologic Studies on Hereditary Nature of Aging.—Vogt points out that the various signs of senility in uniovular twins have such a degree of similarity or even identity that the formerly accepted opinions of the aging process as a result of environmental factors must be abandoned. The study of senile uniovular twins demonstrates that the signs of the process of aging are inherent in the germ plasm (uniovularity presupposes identical germ plasm of the twins) and that they appear with absolute uniformity at a certain age and in a predestined form. The author's conclusions regarding the hereditary character of the process of aging are based on observations on thirty-four sets of uniovular twins between the ages of 55 and 81. In this report he observes the symptoms of aging on certain parts of the eyes of uniovular twins. Discussing the senile changes on the conjunctiva, he shows that in aged uniovular twins pinguecula as well as spontaneous pterygium appear at about the same time and in the same localization, and he concludes that hereditary factors must play a part in the development of those defects. He further describes and illustrates senile changes on the cornea of sets of uniovular twins. He shows that unilateral, excessive atypical, premature, slight or absent arcus senilis must be hereditary, having observed identical characteristics not only in successive generations but also in sets of senile uniovular twins. Then he demonstrates the hereditary character of Krukenberg's pigment spindle and of the cornea guttata senilis. Following a discussion of the senile degeneration of the pigmented edge of the pupil and the hereditary predestination of this symptom, the author takes up the study of senile cataract in uniovular twins. That the type of senile cataract is hereditary he demonstrates on different sets of senile uniovular twins. Finally he shows that the senile changes in the vitreous body and in the fundus oculi of twins indicate the hereditary nature of these changes also.

Zeitschrift für Immunitätsforschung, Jena

92: 281-444 (March 22) 1938. Partial Index

- Experiments on Serologic Behavior of Native and Heated Blood Serum in Complement Fixation. E. Schwab.—p. 289.
- Behavior of Bacterium of Scleroma and of His Dissociation Forms in Serum of Patient. W. Kurylowicz and E. Mikulaszek.—p. 304.
- Action of Heterogenic Protein Bodies. L. Kostyal.—p. 318.
- Exotoxins and Endotoxins of Dysentery Bacilli: II. Further Studies on Endotoxins of Shiga and Flexner Dysentery Bacilli. R. Haas.—p. 355.
- Epidemiologic Observations in Human Brucellosis in Japan and in Manchukuo. H. Hiroki.—p. 382.
- *Adsorption of Virus of Foot and Mouth Disease by Aluminum Hydroxide with Especial Consideration of Immunizing Characteristics of Virus Adsorbents. S. Schmidt.—p. 392.

Adsorption of Virus by Aluminum Hydroxide.—Schmidt describes the development of an aluminum hydroxide preparation which has a strong adsorbent action for toxin and virus, particularly the virus of foot and mouth disease. The adsorption was studied on the virus in virulent lymph, in the extract from the aphthae, in the virulent serum and on the cultured virus. Virus adsorbents that are produced according to the author's technic are infectious for guinea pigs in case of intramuscular, intraperitoneal or intracutaneous injection. However, if introduced into the subcutaneous tissues the adsorbents are comparatively harmless but develop a rather potent and prolonged specific immunity against foot and mouth disease. It is possible to produce virus adsorbents that contain two or three types of viruses. A single injection of a preparation of this type may produce, under favorable conditions, a potent and permanent immunity against two or three types of viruses. Storage reduces the pathogenic characteristics of the virus adsorbents produced with aluminum hydroxide, but they retain, at least partly, the immunizing capacity. In case of comparatively high temperature, about 37 C., the rapid disappearance of the infectiousness is accompanied by a considerable reduction of the antigenic property. Freezing and drying destroy the pathogenic as well as the antigenic properties of the adsorbents. In the animal organism (subcutaneous tissue) the virus adsorbents undergo rapid changes. The pathogenic capacity disappears rapidly. However, the immunizing capacity is partly preserved and may still be demonstrated in adsorbents that have been in the animal organism for two weeks, in spite of the fact that the organism is already immune.

Zeitschrift für Kinderheilkunde, Berlin

59: 543-667 (April 2) 1938. Partial Index

- *Intoxications by Ustilago Maydis (Ustilaginism) in Children. E. Mayerhofer and B. Dragišić.—p. 543.
- Ascorbic Acid in Treatment of Nutritional Disturbances in Nurslings. Elisabeth Urbanitzky.—p. 553.
- Sinus Thrombosis as Result of Trauma During Birth. A. Meier.—p. 556.
- Experimental Investigations on Diphtheria of Mucous Membranes in Animals: Therapeutic Efficacy of Ordinary ("Native") and Purified and Concentrated Diphtheria Serum. F. von Bormann and Hildegard Ditton.—p. 559.
- Inverse Anaphylaxis in Human Subjects: Contribution to Problem of Manifestations of Hypersensitivity in Human Subjects. E. A. Voss.—p. 612.
- Behavior of Carbohydrate Tolerance of Diabetic Children in Various Types of Diets. H. Hungerland.—p. 649.

Ustilaginism in Children.—Mayerhofer and Dragišić describe observations on fifteen children with ustilaginism, but they also induced ustilaginism in mice and compared the symptoms in the animals with those in the children. They found that young children and nurslings are especially susceptible to ustilaginism and the animal experiments disclosed that young mice too are more readily poisoned with *Ustilago maydis* (smut of maize) than are older mice. Discussing the symptomatology of ustilaginism, the authors say that the disorder frequently begins with gastrointestinal disturbances in the form of diarrhea. Acropathic cutaneous manifestations, particularly severe burning, itching or formication on the palmar and plantar surfaces, is another important symptom. Hyperemia of the extremities often alternates with acrocyanosis. The alternating changes between hyperemia, cyanosis and pallor are noticeable also on the tip of the nose. It is suggested that this variable symptom is the result of an intoxication of the small cutaneous vessels and that the cutaneous edema of the arms and legs, which occurs in severe cases, is likewise a result of this impairment of the cutaneous vessels. If the acrocyanosis persists for longer periods, acrogangrene may develop. The authors observed this

in three of the fifteen cases. On the mucous membranes, gums, lips, conjunctiva and so on, ustilaginism often elicits reddishness, swelling and itching. The tachycardia with hypertension which develops in the severe cases is one of the most persisting symptoms. Nervous disturbances are also likely to develop in cases of ustilaginism; there may be latent or manifest spasmophilia, muscular spasms and pains, nervous irritability, restlessness and delirium. Then there may be some nonessential secondary symptoms such as interdigital rhagades, pigmentations on the tips of the fingers and toes, sensitivity to sunlight and so on. Regarding the differential diagnosis, the authors say that if the anamnesis of a child with acropathy discloses that it has been fed with maize flour in which spores of *Ustilago maydis* can be seen the disorder may be diagnosed as ustilaginism rather than as true infantile acrodynia, ergotism or pellagra. Moreover, ustilaginism, even severe cases, usually responds to dietetic treatment within a few weeks, whereas acrodynia and pellagra last much longer.

Zeitschrift für klinische Medizin, Berlin

134: 1-128 (April 14) 1938. Partial Index

- *Diagnosis of Addison's Disease from Blood Serum. O. Riml.—p. 1.
- Treatment of Addison's Disease and Its Results. E. H. Rynearson, A. M. Snell and E. Hausner.—p. 11.
- Views into Carbohydrate Metabolism by Study of Glycogenosis. F. Erben.—p. 31.
- Therapy of Round Gastric and Duodenal Ulcer. J. Faltischek and A. Wald.—p. 71.
- Qualitative Thrombocytic Aspects in Agranulocytosis. J. Arneth.—p. 87.
- *Pernicious Anemia in Course of Chronic Polyarthrit. A. Schneiderbauer.—p. 113.

Diagnosis of Addison's Disease from Blood.—In studies on changes in the composition of the blood of nephrectomized rabbits Riml found a substance which, when transferred to normal guinea pigs, produces signs of fatigue as well as changes in the adrenals that must be regarded as signs of an increased functional load, for they fail to develop when adrenal cortex extract is administered. The author decided to investigate whether changes similar to those in nephrectomized animals could be observed in patients with adrenal insufficiency. A dialysate of the serum of patients with Addison's disease was administered by intraperitoneal injections to guinea pigs. Control animals of the same size were given injections of a serum dialysate of persons without adrenal defects. Later the animals were killed and their adrenals subjected to microscopic examination. The author made the tests on three patients with Addison's disease. He found that the serum dialysate of these patients contains a substance which, when transferred to guinea pigs, produces in the adrenals of these animals changes which are interpreted as signs of an increased functional load. The severity of the changes in the adrenals of the test animals goes almost parallel with the severity of the Addison's disease in the patient. After the treatment with adrenal cortex extract the serum of the patient no longer contains the substance that causes changes in the adrenals of guinea pigs, but when the treatment with adrenal cortex extract is discontinued the substance reappears.

Pernicious Anemia in Chronic Polyarthrit.—Schneiderbauer describes three cases of primary chronic deforming polyarthrit in which, after this disorder had existed for several years, there developed a genuine pernicious anemia with all objective clinical and hematologic signs. In one of the cases the pernicious anemia developed immediately after an acute exacerbation of the articular disturbance. A causal connection between these disorders, which seems probable in view of the clinical symptomatology, seems even more likely on the basis of Castle's observations. It is suggested that the chronic polyarthrit, as an infectious process, produced by way of the hematogenic route a chronic gastritis with atrophy of the gastric mucosa and subsequent impairment of the secretory functions, so that in addition to the gastric achylia there was a cessation of the production of the intrinsic factor of Castle. This disturbance resulted in the development of a secondary pernicious anemia. The author's observations indicate that the infectious toxic factor is one of the causes that may lead to a cessation of the secretion of Castle's principle. He thinks that Naegeli's opinion that there are only three eliciting factors (syphilis, pregnancy and bothrioccephalus latus) for secondary pernicious anemia is no longer tenable.

Zeitschrift für Krebsforschung, Berlin

47: 209-302 (April 22) 1938

- Experimental Investigation of Question of Pulmonary Cancer of Schneeberg Type. H. R. Döhnert.—p. 209.
Significance of Proteins for Processes in Pathogenesis of Cancer. R. Reding.—p. 240.
*Multiple Appearance of Tumors and of Tissue Deformities. I. Holmqvist and A. Nelson.—p. 257.
Improved Method of Vaccination in Research on Cancer. S. Konsuloff.—p. 273.
Clinical Considerations on Question of Occupational Cancer in Asbestos Workers. F. Hornig.—p. 281.
Occupational Cancer in Asbestos Workers. M. Nordmann.—p. 288.

Multiple Appearance of Tumors.—Holmqvist and Nelson state that a number of investigators have given their attention to the exact definition of the term primary multiplicity but have failed to agree. However, all of them emphasize how important and difficult it is to differentiate metastases from the primary multiple tumors. The authors aim to show under what conditions multiplicity occurs and what factors influence multiplicity and to compare the results obtained on their own material with those obtained by other authors. For this reason their method of classification was to a certain extent influenced by that of others. Like Puhf, the authors have classified hypertrophy of the prostate with the tumors, although they are aware that the blastomatous nature of this hypertrophy may be questioned. The material on which the authors base their conclusions comprises 4,000 unselected cases that came to necropsy at the hospital of St. Erik in Stockholm. Tumors were discovered in 55.8 per cent of the cases. Primary multiplicity of tumors was discovered in 22.5 per cent of the cases. The multiplicity seems to be influenced by age and sex. A tendency to multiple appearance seems to increase with the years; women have a greater tendency for multiplicity than have the men of the same age. Multiplicity is more frequent in benign than in malignant tumors. The following combinations are especially frequent: uterine myomas and uterine polyps, benign tumors of the uterus and benign tumor of the endocrine organs, particularly of the thyroid, and finally benign tumors in the different portions of the digestive tract. A tendency for the formation of benign tumors may involve the entire body, a system of organs, organs or parts of organs. Factors prevailing in case of primary multiplicity of tumors justify the assumption of a probably genetically conditioned local diathesis. Moreover, the authors suggest the possible existence of a similar generalized tumor diathesis.

Wiener medizinische Wochenschrift, Vienna

88: 425-452 (April 16) 1938. Partial Index

- Anomalies in Soft Sections of Birth Channel and Their Treatment. L. Kraul.—p. 426.
*The Lungs as Most Frequent Seat of Primary Foci of Rheumatic Infection. J. Havas.—p. 440.
Vitamin B₂ (Riboflavin) Treatment. S. Kalter.—p. 446.

Lungs as Foci of Rheumatic Infection.—On the basis of four case records, Havas says that the possibility of primary pulmonary foci of rheumatic infection is established. The high statistical incidence of chronic bronchitis among rheumatic patients in whom no other demonstrable foci, such as teeth or tonsils, exist indicates that the majority of rheumatic disorders are of pulmonary origin. The rheumatic foci are based on pulmonary lesions of the ulcerous-cavernous type which have healed by scarring. Rheumatic alterations and lesions in the joints and their adnexa depend on local allergic influences, which are released in some instances by the bacilli of tuberculosis but most frequently by the common bacteria of the mixed infection of ulcerous pulmonary processes.

Polska Gazeta Lekarska, Lwów

17: 353-376 (May 1) 1938

- Structural Alterations of Aorta in Children and Their Relation to Sclerosis. Z. Albert.—p. 355.
The Problem of Negative T₃. B. Tanne.—p. 357.
*Roentgen Therapy of Malignant Granuloma. M. Spritzer.—p. 360.
Comparative Research on Rheumatic Reactions. E. Bokser and J. Szubarga.—p. 363.
Experimental Research and Clinical Action on Digitalis (Gitolan). J. Walawski and H. Raselt.—p. 365.

Roentgen Therapy of Malignant Granuloma.—Spritzer has treated fifty-six patients with malignant granuloma by roentgen therapy. He divided them into two groups. In

group 1 twenty-seven patients had been treated between the years 1926 and 1932. These patients had been given low voltage roentgen therapy averaging from 200 to 300 skin doses in the region of the external glands and from 500 to 600 skin doses in the region of the internal glands. This series of roentgen therapy was repeated after several months had elapsed, according to the physical condition of the patient. In group 2 there were twenty-nine patients to whom roentgen therapy had been applied between the years 1932 and 1936. These patients had been given large fractional doses, externally from 800 to 1,200 roentgens and internally as much as 5,000 roentgens. In cases of relapse, roentgen therapy was repeated. It has never been applied on healthy glands. In conclusion he says that roentgen therapy of malignant granuloma cannot be employed schematically but must be used individually. It should be applied only to diseased glands, the rest of the lymphatic system being spared as much as possible. It should be administered only in case of relapse and not as a preventive. In the early stages of disease weak doses should be prolonged, if possible, in order to lengthen the life of the patient. In later stages it is necessary to give more intensive treatment. Roentgen therapy should be applied also to the bones in each case.

Medichnyi Zhurnal, Kiev

7: 1117-1551 (No. 4) 1938. Partial Index

- Second International Congress on Blood Transfusion (Paris). O. O. Bogomolets.—p. 1127.
Pathogenesis of Grave Posttransfusional Reactions not Dependent on Blood Groups. O. O. Bogomolets.—p. 1137.
Albumin Content of Tissues in Experimental Hyperproteinization and Hypoproteinization. N. B. Medvedeva.—p. 1145.
Supravital Staining of Surviving Sections of Normal Tissues in Physiology and Hypotonic Surroundings. E. Smolovskaya.—p. 1354.
*Genesis of Cerebral Gliomas. V. G. Lazarev and A. D. Dinaburg.—p. 1369.

Genesis of Brain Gliomas.—Lazarev and Dinaburg studied eighty instances of glioma and found that 25 per cent of them exhibited embryonic origin. Considered from an embryologic point of view, the tumors were divided into four groups: (1) those of dystrophic origin, (2) those exhibiting embryonal foci enabling one to follow the course of development of the growth, (3) those associated with anomalies and developmental malformations and (4) those in which glioma was associated with gliomatosis. The first group was represented by seven cases, of which six were in children, with a localization in the region of the vermis of the cerebellum, tumors of the median line designated cytologically as medulloblastomas. The development of these tumors in children, their median localization corresponding to the fissure in the closure of the neural tube—regions giving rise to a number of anomalies and developmental malformations—speaks in favor of embryonal origin. In three of these cases the authors found a hyperplasia of the reticular tissue and they felt justified in designating this variety of tumor a reticuloglioma. A second group, consisting of four astrocytomas, exhibited a conglomeration of cells identical with "growth centers" described by Obernsdorfer in ganglioneuromas and neurinomas. These growth centers were localized principally in the neighborhood of blood vessels. In some instances they consisted exclusively of elements characteristic of an early embryonal stage (medulloblasts); in others there were found, in addition, more mature types of cells representing a transition to astrocytes. As a rule, mature astrocytes are found outside the growth centers. The transitional elements may be found scattered throughout the tumor tissue. In one case of astrocytoma there was observed along with the growth centers an additional tumor consisting of embryonal elements. The presence of a second mature astrocytoma in the opposite hemisphere of the brain enables one to regard growth centers as a manifestation of multicentric growth of the tumor. The third group was represented by three cases in which glioma was associated with heterotopias, irregular formation of the radiations of the cerebellum, development of accessory radiations, and so on. The fourth group was represented by seven cases in which, in addition to the circumscribed growth of the type of astrocytoma, there was observed in the opposite hemisphere gliomatous proliferation representing a developmental anomaly of glial tissue capable of transformation into a genuine glioma under conditions that are still not understood.

Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

S2: 1683-1806 (April 9) 1938. Partial Index

- New Electrocardiographic Aspects of Angina Pectoris. C. L. C. Van Nieuwenhuizen, H. A. P. Hartog and E. Matthijssen.—p. 1695.
Exophthalmos in Hyperthyroidism. L. P. Daniels.—p. 1704.
*Flavidine Treatment in Gonorrhea of Women. R. Simons and C. A. Eindhoven.—p. 1713.
Severe Nicotine Poisoning by Nicotine Gas. H. N. Kemme.—p. 1718.

Gonorrhea in Women.—Simons and Eindhoven report their experiences with an acridine derivative in the treatment of eighteen women with gonorrhea. The preparation used by the authors was flavidine, an acridine preparation which contains arsenic in an organic combination and which, while not irritating like acridine hydrochloride, nevertheless has a good gonococcidal action. The preparation was first used for the treatment of gonorrhea in 1932. Favorable reports about the preparation induced the authors to employ it in acute cases of gonorrhea, in preference to the new sulfanilamide preparation, which is better suited for the chronic cases. Before treatment is instituted, cultures are made from material obtained from the urethra, cervix and rectum. In the treatment of the cervix uteri, the organ is exposed with the aid of a speculum, the secretion is wiped away and then the flavidine is introduced by means of a syringe. At first 1 cc. is administered, then 2 cc. and then 3 cc. If some of the fluid flows back, it is wiped away to avoid erosions. For greater safety a tampon is introduced into the vagina; this can be removed by the patient on the following morning. The treatments are given daily for eight days. After each series a control test is made. From one to six series are required for the treatment of cervical gonorrhea, but the average is about three series of eight days each. In approximately half of the women treated, the cervix was cured after eight days. In rectal gonorrhea, in which flavidine was equally effective, 5 cc. was instilled and from one to four series of treatments were required for cure. The urethra was not treated with flavidine but rather with the usual silver preparations. The silver therapy required one or two months longer than the treatment with flavidine, but the cervix was never reinfectd from the urethra. Reviewing the results of the flavidine treatment, the authors say that all eighteen women were cured. Control examinations extending over periods of from three to twelve months proved that there was only one relapse, which actually may have been a reinfection. On the basis of these observations the authors think that flavidine is the remedy of choice in the local treatment of gonorrhea in women.

S2: 1807-1894 (April 16) 1938

- Blue Fluorescence of Urine in Ultraviolet Light Caused by Indoxyl Compounds. G. A. Kreuzwendedich von dem Borne.—p. 1808.
Apparatus for Measurement of Mean Diameter of Erythrocytes. L. Schalm.—p. 1817.
*Ureteronephrectomy in Treatment of Renal Tuberculosis. C. Van Gelderen.—p. 1820.
Thrombosis in Puerperal Women. D. G. Wesselink.—p. 1831.
Acute Intestinal Invagination in Nurslings and Early Diagnosis. L. D. J. Thorbecke.—p. 1834.

Ureteronephrectomy in Renal Tuberculosis.—Van Gelderen reports that in a series of thirty-seven patients with renal tuberculosis primary ureteronephrectomy was carried out systematically. This did not augment the risk for the patient, in the form either of an increased operative mortality or of a higher mortality shortly after operation. The ureteral wound nearly always healed primarily and permanently; disturbance in the healing of the renal wound did not occur less frequently than in simple nephrectomy, so that the ureter cannot be looked on as the cause of this disturbance, except in rare cases of long standing. Ureteral empyema, cold abscess and acute abdominal pains are prevented. Even in the unfavorable class of patients the lasting results were found to be favorable; only three patients died, and in all the mortality was of the remote type. Thus nothing was experienced of the disadvantages ascribed to the method by some; the expected advantages to some extent were not found (wound healing), but if present they could clearly or most probably be ascribed to the ureteronephrectomy (lasting results, rapid healing of the bladder). The operation deserves to be advocated.

Acta Medica Scandinavica, Stockholm

95: 129-436 (April 29) 1938. Partial Index

- Source of Error in White Blood Count. J. Engelbreth-Holm and C. C. Winkel Smith.—p. 129.
Hemorrhagic Thrombocythemia. U. Uotila.—p. 136.
*Physiologic Mechanism of Decrease of Acidity in Gastric Contents. W. N. Boldyreff and W. F. Martin.—p. 151.
Studies on Hemoglobinuria. F. L. J. Jordan.—p. 319.
Studies on Urinary Sediment: I. Technic. A. Næraa.—p. 341.
*Id.: III. Effect of High Protein Diet on Course of Nephritis, with Special Reference to Urinary Sediment. A. Næraa.—p. 359.
*Id.: IV. Urinary Sediment in Men Riding a Six Day Bicycle Race. A. Næraa.—p. 383.

Mechanism of Decrease of Acidity in Gastric Contents.—Boldyreff and Martin maintain that the chief factor in limiting the acidity of the gastric contents is food, particularly protein, but they do not discuss this phase of the problem. They emphasize that there is no such thing as hyperacidity, because gastric juice is always secreted with a definite degree of acidity of about 0.5 per cent of hydrochloric acid. They think that it would be better to abandon the term hyperacidity, substituting for it a more fitting term such as hypersecretion. Discussing the disagreement between clinicians and physiologists about the acidity of gastric juice, they say that for about 100 years clinicians considered it to be about 0.15 per cent, whereas the physiologists since the time of Heidenhain have maintained that it was about 0.5 per cent. Only in the twentieth century did the investigation of so-called duodenal regurgitation furnish an explanation. The authors describe the phenomenon of regurgitation of the duodenal contents into the stomach containing acid. They describe and discuss experiments by Boldyreff, Lewis and Slagle. The tests that were made on man and dogs may be classed in three groups: The first group demonstrates that in the presence of acids in the stomach there always is a decrease in the acidity (neutralization of acidity). Analyses of the chloride content, after hydrochloric acid has been administered, indicate that the main part is played not by dilution of the liquid but by binding of the acid. The second group of experiments demonstrates that neutralization is effected from the duodenum, because, if the stomach or a portion of it is isolated, the neutralization is never normal. The presence of bile and intestinal mucus during the process of neutralization explains the source of the liquid which binds the acid. The third group of experiments shows that removal of duodenal fluids almost entirely excludes the process of neutralization. The authors reach the conclusion that the main factor in the neutralization of acidity in the stomach is the alkaline pancreatic juice which is regurgitated from the duodenum while there is still powerful acid present in the stomach. The gastric mucus also effects a certain binding of the acid introduced into the stomach. Dilution plays an insignificant part in the reduction of the acidity of the gastric contents. Normally this is achieved by the pancreatic juice which comes from the intestine. In pathologic cases, with insufficient action of the pancreatic gland, dilution is achieved by saliva, bile and intestinal juice. Participation of the pyloric juice is also quite probable.

High Protein Diet in Nephritis.—It is pointed out by Næraa that, owing to the complete failure of drug therapy in hemorrhagic nephritis, the diet has always been an important problem in the treatment of this disease. A milk diet was long considered preferable. In recent years, however, it has been replaced by a diet rich in carbohydrate but poor in protein. Ever since 1879, when Aufrecht set up his strict diet, protein has practically been banned from the diet of nephritic patients. In the last six or seven years, various authors (encouraged in particular by Epstein's studies on the pathology of nephrosis) have insisted more and more convincingly that protein ought to be introduced in the treatment of nephritis. In 1925 Addis gave a method for the determination of the numbers of erythrocytes, leukocytes, epithelial cells and casts in the urine. In 1933 the author adopted this method in order to study the possible noxious effect of a high protein diet on patients with acute nephritis. The plan was to give patients with acute or latent hemorrhagic nephritis alternately low and high protein diets. As soon as the patients entered the hospital they were put on a diet consisting of 250 Gm. of cream, 250 Gm. of milk, 250 Gm. of fruit, 200 Gm. of bread, 500 Gm. of green vegetables, 100 Gm. of potatoes, 100 Gm. of butter and 250 Gm. of oatmeal porridge

with sugar. Only if the patients on admission were seriously ill, with oliguria, nausea and vomiting, were they given another diet, i. e., a limited supply of water and almost an absolute fasting diet. As soon as they had any desire for food they were given the aforementioned diet. This diet represents a daily intake of about 2,750 calories with a protein content of about 40 Gm. Each patient was kept on this diet for a variable length of time, while he was under observation and the diagnosis was established. The feature that decided when the patient was to be given the high protein diet was most often behavior of the hematuria. As a rule the author waited till the hematuria had become fairly constant as estimated by daily counts. The high protein diet consisted of the same food articles as previously listed, except that the 250 Gm. of oatmeal porridge was replaced by 250 Gm. of lean beef, usually in the form of a steak. Given in this way, the diet represents more than 3,000 calories and contains about 125 Gm. of protein. The patients were given these two diets alternately, through periods varying from eight to nineteen days. Quantitative examination of the urinary sediment in ten patients having various forms of hemorrhagic nephritis who were treated in this manner showed nothing to suggest that a high protein diet is injurious to the kidneys of such patients.

Urinary Sediment After Six Day Bicycle Race.—Næraa says that, since Addis in 1925 presented his method for quantitative urinary sediment determination and demonstrated the occurrence of hyaline casts and red blood cells in the urine of normal persons, the interest in the physiologic variations in the amount of these elements has been aroused anew. The fundamental question now arises whether physical exertion produces an increase in the number of erythrocytes and casts normally present in the urine and whether other kinds of casts besides the hyaline may appear under the same conditions. In order to elucidate this question the author made sediment counts on thirty-four specimens of urine from twelve men who took part in a six day bicycle race in Copenhagen in 1934. He used the method of Addis. He says that his studies on the urinary sediment of these men disclosed no signs of renal lesions.

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Observations on Hypopituitarism: Contribution to Early Diagnosis. H. Zondek.—p. 437.

Fractional Analysis of Alveolar Air After Inspiration of Hydrogen as Method for Determination of Distribution of Inspired Air in the Lungs: Examinations of Normal Persons and of Patients Suffering from Bronchial Asthma and Pulmonary Emphysema. E. Roelsen.—p. 452.

*Occurrence of Different Types of Pneumococci in Cases of Acute Pneumonia in Stockholm. S. Gard, G. Löfström and G. Jacobsohn.—p. 483.

Etiology of Epidemic Hepatitis. T. T. Andersen and S. Tulinius.—p. 497.

Valve Stenosis of Main Bronchus. B. Söderling.—p. 510.

Types of Pneumococci in Acute Pneumonia.—Gard and his associates point out that the type differentiation of the pneumococci has opened up fresh avenues of approach for the study of the epidemiology and therapy of the pneumococcal infections. The satisfactory experiences gained abroad with specific serum therapy have led to its being tried in Sweden. The aim of the researches reported in this paper has been to ascertain the importance of various types of pneumococci as a cause of pneumonia. The authors reach the conclusion that the sharp line of distinction between croupous lobar pneumonia and catarrhal bronchopneumonia cannot be maintained. Acute pneumonia presents varying pathologico-anatomic appearances ranging from the fibrinous, lobar form, passing gradually into catarrhal bronchopneumonia and showing intermediary and mixed forms with variations in regard to the abundance of fibrin and the lobar dispersion. The pathologico-anatomic diagnosis made on the basis of clinical and roentgenologic observations is of course of value in determining the prognosis, but its importance in that respect is enhanced if it is supplemented by a bacteriologic investigation, which moreover is absolutely essential as a preliminary to a specific therapy. The authors have not been able to confirm Gundel's theory that the pathologico-anatomic aspect of pneumonia is determined entirely by the serologic type of the pneumococci. Other factors play at least as important a part in this respect. If, then, it is hardly justifiable from that point of view to ascribe any special position to types 1 and 2, never-

theless it cannot be denied that type 1 predominates in the frequency statistics in spite of the fact that several of the other types have proved to be capable of causing pneumonia with as high a rate of mortality or one even higher. Gundel's assumption that dissimilarities in the mechanism of infection (exogenous-autogenous infection) is the decisive factor in this respect can hardly be accepted as a satisfactory solution of the problem. From the investigations the authors have carried out it appears that approximately half of the lobar forms of pneumonia are caused by pneumococcus type 1, so that the production of type 1 serum for therapeutic use must be regarded as one of the most important means of reducing mortality from pneumonia. The next step would be to make serum against types 2 and 7. The experience gained abroad as to the effect of serum against these three types of pneumococci has been extremely favorable.

Hygiea, Stockholm

100: 177-224 (March 31) 1938

*Meningeal Hemorrhages, Originating from Rupture of Aneurysm in Basal Arteries of Brain. R. Luft.—p. 177.

*Gas Phlegmon in Lund Surgical Clinic from 1920 to 1936: Cases. F. Koch.—p. 194.

Meningeal Hemorrhages.—Luft reported twenty-five cases of meningeal hemorrhages due to rupture of an aneurysm in the basal arteries of the brain. The most frequent localization was the middle cerebral and the anterior communicating arteries. The aneurysms varied in size but were usually as large as a pea. He says that, on rupture of the aneurysm, intrameningeal hemorrhage along the base of the brain generally occurs. In many cases the hemorrhage in the meninges is complicated by disturbances in the brain parenchyma near the aneurysm. Lumbar puncture, done in eleven cases, showed microscopic blood in two and macroscopic mixture with blood in nine. The pressure of the spinal fluid was abnormally high. The combination of sudden cerebral symptoms and sudden stiffness of the neck supports the diagnosis of ruptured aneurysm. The smaller hemorrhages cause dulness and apathy; the more massive bleedings may result in death without the patient's return to consciousness (nine cases). Irritation of the brain cortex causes spasms, a common symptom. If the hemorrhage damages the brain substance near the aneurysm, hemiplegia and hemiparesis result (nine cases). In eleven cases there were disturbances in the pupillary reflex; in six, anisocoria; in five, paresis of the muscles of the eye; paralysis of the facialis nerve occurred in four cases, all with aneurysm in the anterior cerebral artery. The symptoms may suddenly disappear, to be followed by a second hemorrhage, often in a period free from symptoms. The blood pressure is frequently no higher than is normal for the patient's age. Atherosclerosis appeared in only two of the patients under the age of 60, and was no more marked in the patients over 60 than was to be expected at the age. The theory that atherosclerosis is the primary cause of the aneurysm or the immediate factor in cases of congenital defect in the wall of the blood vessel is therefore not accepted. There was neither history nor sign of syphilis in any case. Great importance is attached to congenital defects. While the author has found no record of any case in which there was recovery, in two reported cases the first hemorrhage occurred seventeen and twenty-one years, respectively, before the second, fatal hemorrhage (Fearn-side).

Gas Phlegmon in Lund Surgical Clinic.—Six of Koch's twenty-four cases of gas phlegmon were fatal. Twenty-one were the result of accidents (nineteen complicated fractures, two lacerations of the soft parts). Gas phlegmon thus occurred in 3 per cent of the 700 cases of complicated fractures or more extensive lacerations of the soft parts in which treatment was given during the period from 1920 to 1936. All the accident patients were admitted within two and a half hours after the injury. In most cases the early symptoms of gas phlegmon appeared in from half a day to three days after the injury, in two cases in five and seven days respectively. The incubation period for the fatal cases was from one to seven days. Of the ten patients treated by amputation within six hours, nine recovered; of the nine in whom amputation was done after six hours of expectation, five recovered, and of the five treated conservatively, four recovered.

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SUBJECT INDEX

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The letters used to explain in which department the matter indexed appears are as follows: "BI," Bureau of Investigation; "E," Editorial; "C," Correspondence; "ab," abstracts; the star (*) indicates an original article in THE JOURNAL.

This is a subject index and one should, therefore, look for the subject word, with the following exceptions: "Book Notices," "Deaths," "Medicolegal Abstracts" and "Societies" are indexed under these titles at the end of the letters "B," "D," "M," and "S." State board examinations are entered under the general heading State Board Reports, and not under the names of the individual states. Matter pertaining to the Association is indexed under "American Medical Association." The name of the author, in brackets, follows the subject entry.

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- Acad.—Academy
Am.—American
A.—Association
Coll.—College
Conf.—Conference
Cong.—Congress
Conv.—Convention
Dist.—District
Hosp.—Hospital
Internat.—International
M.—Medical
Med.—Medicine
Nat.—National
Phar.—Pharmaceutical
Phys.—Physicians
Rev.—Revision
Ry.—Railway
Soc.—Society
Surg.—Surgery
Surgs.—Surgeons
S.—Surgical
M.—Medical
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